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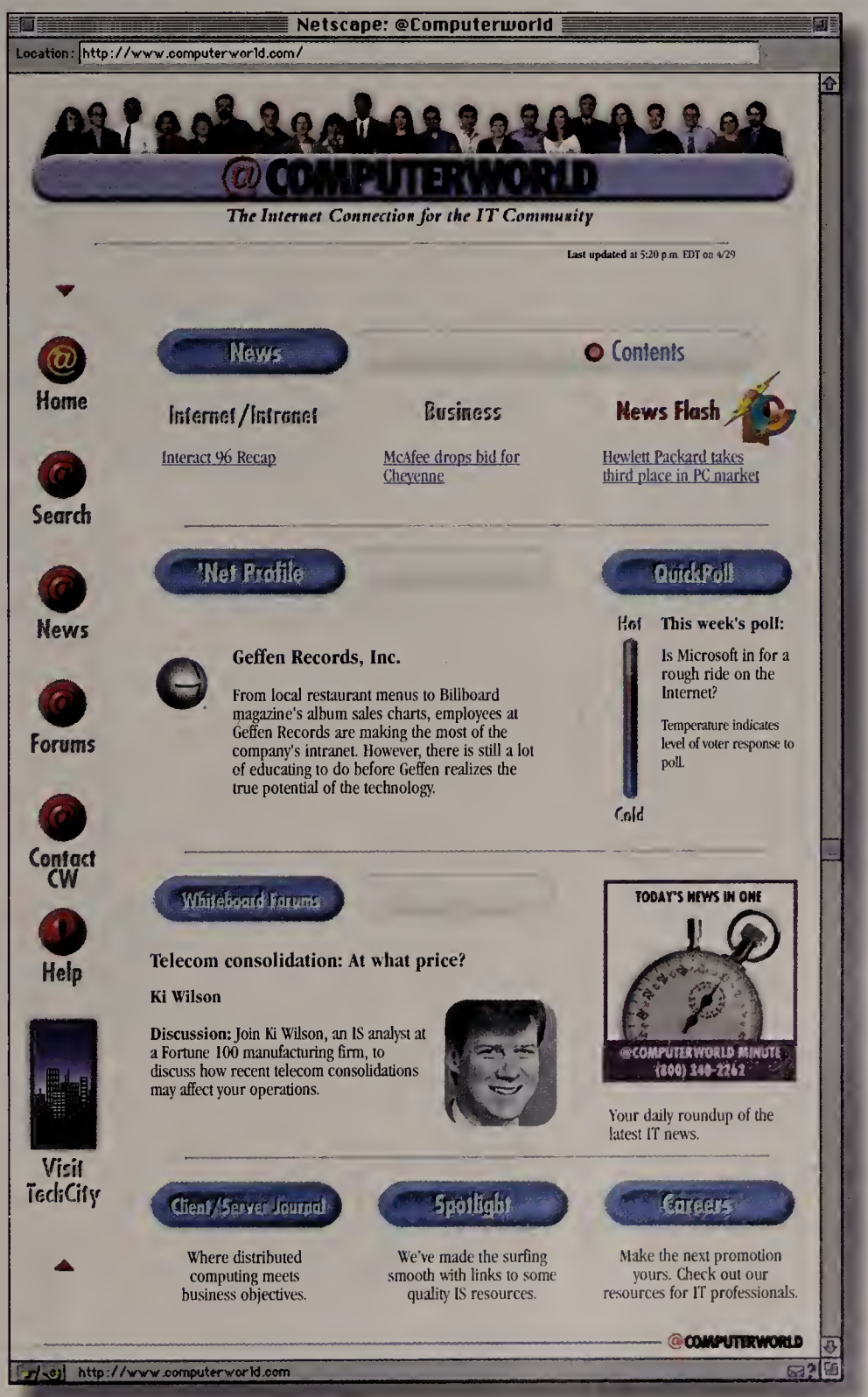

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The Newspaper of Information Systems Management
May 13, 1996, Vol. 30, No. 20, 142 Pages, $6/Copy, $48/Year

COMPUTERWORLD

Apple recall sours premium price plan

By Lisa Picarille

The timing couldn't be worse.

Macintosh users and analysts agree that Apple Computer, Inc. will have a hard time charging a premium price for its products in light of last week's announcement that as many as 1 million Macintoshes could be seriously flawed.

The Cupertino, Calif., company plans to reimburse its authorized dealers to repair or refurbish defective machines at no cost to users.

Cyberdog, Apple's Internet suite of OpenDoc applets, ships this week. **See page 16.**

The affected models include the Power Macintosh 5200LC and 5300LC, several models in the Performa 6200 and 6300 lines and the PowerBook 5300s and 190s. Each of these models crashes randomly and often, and freezes up intermittently (see chart, page 16). Dealers will try to repair the Power Macintoshes and Performas, but the PowerBooks will have to be sent to a central

Apple recall, *page 16*

WHAT'S INSIDE

- Netscape plans software for processing credit-card transactions over the Internet. **See story, page 6,** *by Mitch Wagner.*
- A tiny digital audio company in Hollywood, Fla., has filed lawsuits against Microsoft, Netscape, America Online and two dozen other online and voice-mail vendors, alleging patent violations for audio technology. **See story, page 6,** *by Kim S. Nash.*
- Traveling man Dan Coolidge shares his experiences in his new book *Survival Guide for Road Warriors.* **See story, page 8,** *by Mindy Blodgett.*
- SAP AG announces tools to simplify and ease the cost burden of R/3 implementations. **See story, page 12,** *by Julia King.*

Tandem's Roel Pieper (left) and Microsoft's Steve Ballmer *say they will bring clustering and reliability to Windows NT servers*

Tandem to enable fault-tolerant NT

By Michael Goldberg

Microsoft Corp. last week sought to allay any concerns about Windows NT's reliability for mission-critical applications by striking a deal with fault-tolerant systems leader Tandem Computers, Inc.

The pact means that in return for a payment of more than $30 million from Microsoft, Tandem will make Windows NT versions of its proprietary fault-tolerant middleware, including its NonStop SQL database system.

Users and analysts said the deal lends

Tandem, *page 15*

Mixed messaging

Digital floods users with mail options; vision unclear

By Tim Ouellette

Digital Equipment Corp. this week will gallop into the Internet E-mail race with AltaVista Mail, hoping to lasso new users for the firm's messaging products.

But users of Digital's existing electronic-mail products, MailWorks and All-In-1, have yet to see a clear vision of the future for their systems.

And the message has been further clouded by Digital's support of Microsoft Corp.'s Exchange for Windows NT and reports that Digital may provide NT-based OfficeServer as an alternative to Exchange.

"Digital sees its own products as answers for the enterprise" and mixed environments, with Exchange targeted more at the Windows NT workgroup level for now, said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass.

AltaVista Mail 1.0 is a Windows NT-based Internet E-mail server that works with any of the inexpensive Post Office Protocol-3 E-mail clients on the market. It targets companies with several remote offices or smaller departments that need Internet mail access — not Digital's traditional audience.

History lesson

Digital's All-In-1 has changed a lot since 1982. Version 3.2 now runs on Digital's Alpha platform and has discarded the proprietary interfaces to keep up with current standards.

For example, network manager Paul Demediuk at Washington University's School of Medicine, turned to AltaVista Mail to manage student E-mail accounts. The St. Louis university has never been a user of Digital's products; it ran a basic Unix-based E-mail system instead.

"I was constantly adding and taking people off the Unix system," Demediuk said. "AltaVista Mail is a lot easier [to use] to administer transient accounts, and the users can do some basic administration themselves from their Web browser."

Simple administration is one feature luring many current MailWorks and All-In-1 users who run Unix and OpenVMS to look at Windows NT.

Mixed messaging, *page 16*

Novell battles on NT, Internet fronts

By Laura DiDio

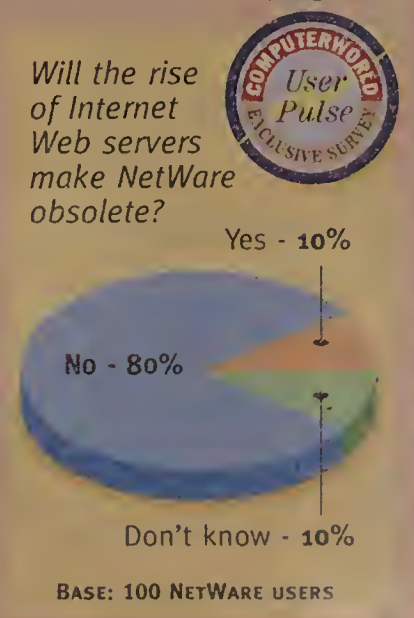
After three years of strategic missteps and costly acquisitions, a newly svelte Novell, Inc. is making many of the right moves.

Having exited the desktop application market by unloading WordPerfect and its UnixWare offerings at a staggering loss, the Orem, Utah-based networking firm will use the Internet to become a network services company, President Robert Frankenberg said last week.

This latest strategic twist will find Novell caught between a rock and a hard place — Microsoft Corp.'s Windows NT Server, and the perception that Novell won't be able to match its success with NetWare in the LAN market with a similar dominance of the Internet arena.

The industry's prognosis for Novell's long-term success is guarded optimism based on its biggest asset: a mostly loyal installed base (see chart below) and the company's newfound

Novell, *page 113*



Newspaper

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Inside Computerworld

May 13, 1996

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A specification is being prepped that will let users access multiple data sources over the 'net.

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Weirdos: *They're brilliant, bizarre and indispensable. Don't let your eccentric superstars drive you nuts.* **See Managing, page 81**

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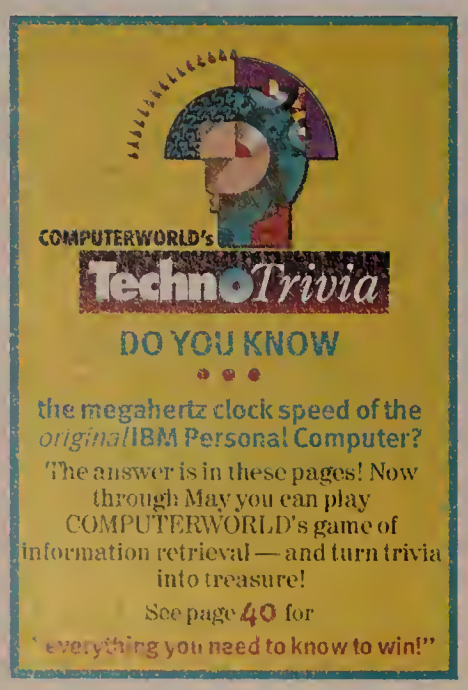

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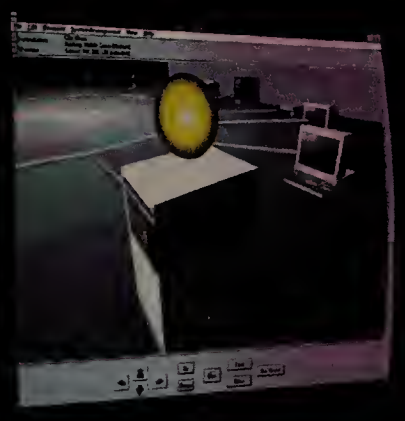

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Big Brother on the farm

It's 11:00 p.m. Do you know what the dairy cows of America are doing?

DDx, Inc. in Boulder, Colo., does and is bringing that information to the World Wide Web with help from Internet developer Online Network Enterprises. DDx's Web site **(http://www.heatwatch.com)** helps farmers get regular updates on the breeding activity of their dairy cows, which is crucial information for dairy farmers who want to maximize the reproduction of their herds.

With the HeatWatch system, sensors attached to cows register the activity and transmit the data via the Internet to DDx, which returns a management report to the farmer.

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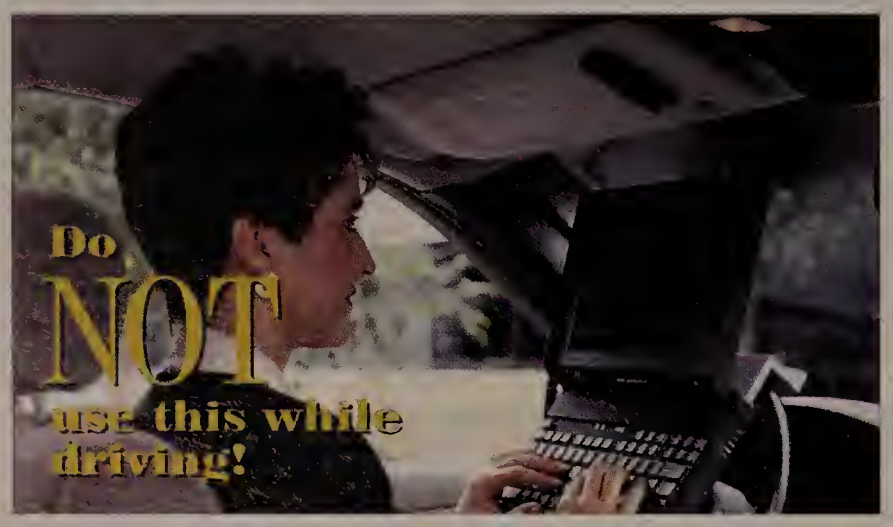

Ingenious Technologies Corp. in Massillon, Ohio, offers a plastic PowerDesk that hooks over a car's steering wheel and holds a portable computer at eye level. The peripheral, priced at $60, is meant for traveling sales personnel who want to get some work done between appointments. But what makes the product really interesting is the warning printed in large letters on the front surface: "WARNING: DO NOT use this device unless vehicle is in a safe location and ignition is turned OFF!" It's on par with the notice printed on cardboard windshield sun shades: "Warning: Do Not Drive With Sun Shield in Place."

Great error messages

From a Digital OSF/1 server:
RCP: PROTOCOL SCREWUP: UNEXPECTED

User sought j4.zip but typed J44.zip:
CAN'T FIND J44.ZIP, JJ4.ZIP OR J444.ZIP – SO THERE!

From an unknown compiler:
ERROR NO. 5: INSUFFICIENT USER I.Q.

At the impending crash of a Texas Instruments 990 minicomputer:
SHUT 'ER DOWN, CLANCY, SHE'S PUMPING MUD

Source: Compiled from Usenet's comp.human-factors

Send contributions of offbeat news, lists and anecdotes to mbetts@cw.com.

The days of police sketch artists are numbered. ImageWare Software in San Diego says its software for creating suspect composites is used in 150 police departments. It costs $5,000 or can be leased for $750 a year. Users say the color composites are more realistic than hand-drawn sketches and can be generated with a laptop PC at the crime scene. Another module can alter mug shots to show aging or remove a mustache.

News to ponder

- **Sixty percent of American consumers say PCs must be discounted by 40%, 50% or 60% off regular prices before they will buy them, according to a survey by America's Research Group in High Point, N.C.**
- **Encyclopaedia Britannica will cease door-to-door sales in favor of more investment in direct mail, online services and the Internet as sales channels.**
- **Thieves stole a network file server from police headquarters in Johannesburg, South Africa, in April, thus shutting down a 90-terminal LAN, *Computing South Africa* reports.**

Digital Frontiers

For an autistic child, an environment full of sights and sounds can be overwhelming. It's like going through life with "a hearing aid stuck on superloud," as one put it.

So Dorothy Strickland, a Ph.D. candidate at North Carolina State University, decided to use virtual reality technology to test the theory that autistic children could learn better in a controlled, simplified environment with fewer stimuli.

Strickland's experiment involved virtual-reality headgear and a simple street scene, with the goal of teaching the children how to cross a not-so-busy street. She reports that the experiment, although limited, was a success and is a promising sign that virtual reality can be used to train autistic children.

The children — in the virtual world — were able to navigate the sidewalk, identify a moving car and cross at a stop sign. That is something that ordinarily could take two years for them to learn, Strickland says.

The application recently won an award from "CyberEdge Journal," a San Francisco-based newsletter on virtual reality.

News shorts

Breaking up is hard to do

The Association of Systems Management (ASM) has decided to dissolve its executive committee, sell its Cleveland headquarters and place all power in the hands of its 54 regional chapters.

Declining enrollment and economic uncertainties have led the 49-year-old organization to decentralize its operations, said Ann Purr, international president of the user group. ASM membership has dwindled from 8,500 to 3,000 in the past decade.

"Who knows whether we'll end up with 12 ASM chapters or 50 ASM chapters — it's hard to say because it's up to every individual chapter," Purr said.

ASM's executive committee will remain for a few months to help guide the chapters through the transition.

Cybervictims blamed

Four out of 10 U.S. companies have been victimized by computer crimes in the past year, a survey released last week suggests.

But many of the victims may have only themselves to blame. Most claimed to have written security policies, but 60% of the companies surveyed said the policies aren't well-enforced, and 80% said they don't report crimes to law enforcement agencies.

The survey was conducted by the Computer Security Institute (CSI) in San Francisco and contained questions submitted by the FBI's international computer crime squad. It produced responses from 428 U.S. companies, universities and government agencies.

More than half the companies said they attributed network intrusions to U.S. competitors that operate on the outside, a result that CSI analyst Richard Power said surprised him. He said "conventional wisdom" is that more than 80% of computer crime stems from insiders.

For more **News shorts,** *see page 8*

This week in

@ COMPUTERWORLD

- **Whiteboard forum**
  Join senior editor Laura DiDio in an interactive forum on whether Novell is making the right moves to remain relevant in the networking market.
- **QuickPoll**
  Novell is in the hot seat. Can it do enough, soon enough to pump up its slim Internet/intranet presence?
- **'net profile**
  Check out the latest Web statistics in this month's @CW digest.

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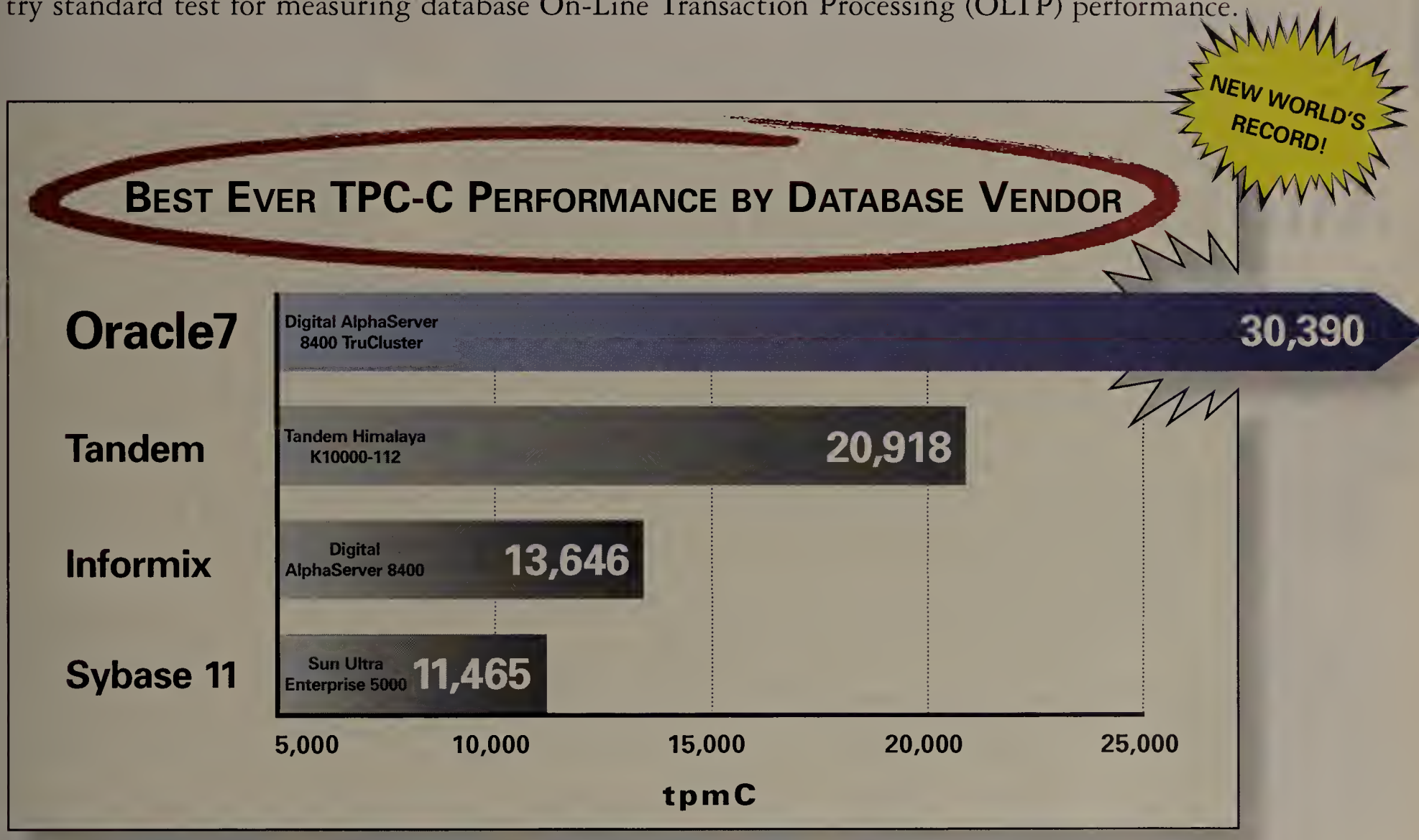

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Credit-card authorization set for 'net

By Mitch Wagner

Netscape Communications Corp. plans to announce today a key component for electronic commerce: software that enables merchants to electronically process credit-card transactions over the Internet.

The LivePayment module will allow online businesses to connect over the Internet with First Data Corp., the company that authenticates about 85% of credit-card transactions nationwide. The software module is due out in the third quarter.

Users implementing LivePayment will be able to eliminate a major kludge in Internet commerce, said San Mai, product manager in the commercial applications group at Netscape in Mountain View, Calif.

Electronic commerce

Merchants can and do collect credit-card information on the Internet, but most of these businesses are authenticating the credit-card information off-line. Operators must read the information off a computer screen and into a telephone or retype the credit-card information into a system designed to take orders via mail or phone.

One of those companies is Air Handling Systems in Woodbridge, Conn. By creating a direct, shrink-wrapped electronic connection from merchant to bank, the new Netscape technology won't eliminate the barriers to online sales, but it is a good start, said Jamison Scott, manager of marketing and administration at the company.

Air Handling sells air-filtration components to remove dust and fumes from industrial shops and offers transactions over the Internet for merchandise priced from $5 to $2,000.

Confidence booster

LivePayment should increase online sales, Scott said. "Even if we don't end up using Netscape's product, I hope it helps with my customer confidence," he said.

Microsoft Corp. plans similar credit-card transaction capabilities, said Joan Morse, group product manager for electronic commerce at Microsoft. Its software will be based on the Secure Electronic Transactions (SET) protocol being developed by Visa International and MasterCard International, Inc., due out in the fourth quarter. Morse said she couldn't predict when the Microsoft software would be available because it depends on the timing of SET.

Netscape plans to make LivePayment SET-compliant when the standard is released, Mai said.

The LivePayment module will run on computers with Sun Microsystems, Inc.'s Solaris Unix. Other popular versions of Unix and Windows NT will be added in the fourth quarter.

Netscape also plans to ship an "electronic wallet" add-on to Netscape's Navigator browser, where users can store multiple credit-card numbers and shipping addresses and keep track of purchases. The free software is due in the fourth quarter. It will be available as a Navigator plug-in and as a Java application, running on all popular Unix, Windows NT, Window 95 and Macintosh versions of Navigator.

New tools for electronic commerce from Netscape

LivePayment: Software server module for authenticating credit-card transactions over the Internet – serves as the electronic equivalent of a cash register.

Netscape Wallet: Runs with Navigator browser to help end users track electronic payments.

Netscape Publishing System 1.5: New version of publishing software permits customized content for users.

Netscape Merchant System Version 1.5: Permits automatic sales tax calculations.

& **Even mainframe** terminals can get Webbed. See page 61.

Audio patent suit sounds cyber-alarm

By Kim S. Nash

Robin Elkins is thinking big and moving fast.

With his recent lawsuit against Microsoft Corp., Netscape Communications Corp., America Online, Inc. and two dozen other vendors, Elkins and his digital audio company — Elk Industries, Inc. in Hollywood, Fla. — have put patent protection in the cyberspace limelight.

According to suits filed in the federal district court of South Florida, these high-profile computer companies have stomped on Elkins' 18-year-old patent for transmitting and storing digital audio signals.

World Wide Web browsers, online service networks and related software let users collect and send audio files illegally, using software technology that Elkins claims he invented in 1976 as an 18-year-old high school graduate.

But Elkins must hurry: He patented the technology in 1978, and his rights are due to expire in November. If he prevails, Elkins will have the Internet to thank for making him rich.

When the Internet took off in the past 18 months, so did wanton use of Elkins' 20-year-old technology, he claimed.

The inventor says he was ahead of his time.

"Most people thought I was crazy back then," he recalled. "'Who wants this digital audio recording thing?' they said."

Companies such as Seattle-based Progressive Networks, Inc., which makes the popular Real Audio desktop package, didn't exist when Elkins created his invention two decades ago. Real Audio lets Internet users play audio files on their PCs.

No networking pipelines in widespread use during the disco years could put Elkins' invention into action. But now, phone lines and networking gear have improved, and the corporate world has caught Internet fever.

"I've waited a long time for this day," he said.

The case could be tricky for both sides because patent laws aren't well-tested yet in the online realm, said Tom Smedinghoff, a technology lawyer at McBride Baker & Coles in Chicago.

Tell it to the judge

At issue: Inventor Robin Elkins claims Netscape, Microsoft, America Online, Progressive Networks and several other online and voice-mail companies infringed on his 1978 patent for technology to transmit and store digital audio files.

History: Elkins has sued IBM, AT&T, Sony and others for the same offense. These companies settled for unnamed sums and agreed to license the technology and pay royalties for its use.

Status of current cases: Most defendants have yet to respond to Elkins' suit, which was filed last month. They must do so by early next month.

At the least, Elkins will have to show that his patent is valid, which isn't a cinch, Smedinghoff said. "It's difficult for patent examiners to determine what's a new [computer] invention and what isn't. You find that there are patents given that shouldn't have been sometimes," he said.

The nonprofit Software Patent Institute was formed to help legal and patent professionals with this very issue. "Not until the '90s, really, is there a body of research that documents technology work adequately. Stuff done in the '70s will be tough to sort out," said Roland Cole, executive director of the nonprofit in Ann Arbor, Mich.

If Elkins wins, he wouldn't be the first individual inventor to stop big vendors in their tracks. Gilbert Hyatt won millions of dollars from U.S. and Japanese companies that infringed on several of his microprocessor patents in the 1980s and 1990s. Unisys Corp. asserted claims to the GIF graphics format and won an unspecified sum in past royalties from CompuServe, Inc. and other companies that illegally used the technology. And Token Ring patent holder Olof Soderblom brought networking suppliers to heel in the mid-1980s.

Microsoft and Netscape hadn't responded formally to Elkins' legal claims as of press time last week.

Netscape, however, plans to fight. "We believe [the suit] is without merit and will defend it vigorously," a spokeswoman said.

Progressive hasn't decided what to do yet, a spokeswoman for the 2-year-old company said.

Netscape to upgrade servers

Netscape today plans to announce upgrades to its line of Internet applications servers, including tools to build customized World Wide Web sites.

The first versions of the servers, running on Sun's Solaris version of Unix, will be released next month. Support for other popular Unix versions will roll out through the fourth quarter.

The servers include the following:

- **The Netscape Publishing System Version 1.5**, which is used to build online newspapers and magazines such as the *Los Angeles Times* site. It includes enhancements for billing corporate accounts and supports customization for individual users. It costs $28,000.
- **The Netscape Community Server Version 1.5**, which was designed to support discussions among members. It includes support for chatting on the Web, using proprietary technology known as Netscape Chat as well as the standard Internet chat technology called Internet Relay Chat. It also permits credit-card billing and support for electronic mail. The price is $10,000.
- **The Netscape Merchant System Version 1.5**, which allows users to search for products. It supports payment schemes that can figure local taxes and supports discounting and coupon programs. The price is $28,000.

— Mitch Wagner

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Basic training for road warriors

By Mindy Blodgett

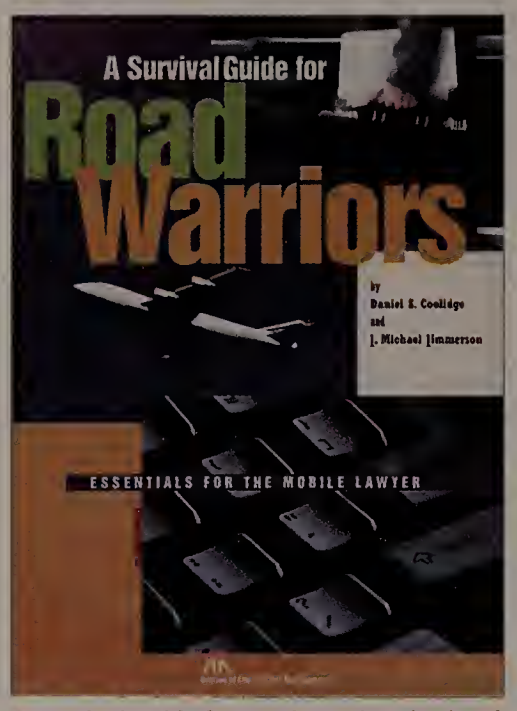
Bart Everett still remembers staying at a budget hotel in Reno, Nev., and desperately trying to send a laptop file via an outdated telephone system.

The deputy systems editor for the *Los Angeles Times* had to trudge out to the hardware store and buy an adapter to "split" a line that was hard-wired to the phone. Only then did he manage to make the file transfer.

"It was annoying to have to go through all that trouble," Everett said. "But that's the way it still is in a lot of hotels — they aren't set up for mobility."

Such are the trials of the road warrior, as more and more remote and mobile workers struggle with communications systems that aren't keeping pace with them.

"Sometimes you feel like you have to become an expert in all sorts of strange technologies," said Dan Coolidge, a lawyer who cowrote a new book aimed at mobile lawyers titled *A Survival Guide for Road Warriors*.



A Survival Guide for Road Warriors *is aimed at mobile lawyers but also offers general tips*

What to do

Some of his best advice for road warriors is to do the following:

- Buy an encryption software program to secure and password-protect your laptop computer.
- Get the best laptop you can afford. Don't wait until prices fall; the investment in notebooks is recouped by using them.
- Call ahead to hotels to make sure the rooms have data ports.
- Don't ever scrimp on communications software.
- Carry a small tool kit to tinker with those pesky telephones if you must.

Coolidge and his co-author, J. Michael Jimmerson, a lawyer and consultant at Legal Counsel and Computing in Chicago, say mobility is changing the way we work — despite formidable obstacles such as laptop breakdowns, waning batteries, systems crashes and dropped telephone connections.

"You can take responsibility for managing your own time," Coolidge explained. "You can be more productive during your work hours, and you can actually end up with more free time because, for instance, you aren't wasting as much time commuting in traffic."

Big payoff

Grappling with different time zones and bosses who worry that you are goofing off instead of really working are small drawbacks compared with the rewards, said Coolidge, an attorney at Sheehan, Phinney, Bass & Green in Manchester, N.H.

As an example of the rewards, Coolidge recounted how he once dictated a chapter of his book while driving to a job site.

While driving, he used his 120-MHz IBM 760C laptop to retrieve his messages through his cellular phone and found out that an overseas client was anxious to reach him. He pulled off the road and sent a response via fax through his cellular phone. "I've literally been able to send things from the middle of a cornfield in Indiana," Coolidge said.

Yet the perils of the road remain.

Jack Frame, a vice president of marketing at Corstates Financial Corp. in Philadelphia, said he spends "way too much time in systems" reconfiguring laptops. Buying laptops is a headache, he said. "You get used to one brand, and a better one comes along, and you have to learn all over again."

Windows 95 has made some functions easier but also created problems, Frame said. "It has been a huge frustration to get all the little applets going with Windows 95," he said.

Canon pitches open workflow

By April Jacobs

Canon USA Corp. plans to demonstrate an open system for document management May 14 in New York.

A source close to Canon said the company is partnering with IBM, Sun Microsystems, Inc., Apple Computer, Inc. and Novell, Inc., among others, to introduce a system that gives users an open environment for document scanning, storage, filing, copying and printing.

Dubbed Netspot, the document management software will be packaged with Canon hardware, the source said.

Jim Bair, research director at Gartner Group, Inc. in Stamford, Conn., said, "Users are looking for a document that can be entered into the network anywhere and retrieved from anywhere else and be printable from anywhere."

Companies attempting to do this must overcome application differences, he said. "For documents, the issue around doing that is having a common reader."

But Bair said compatibility may be less important with the growing use of corporate intranets and the World Wide Web.

News Shorts

HP to mix NT, Unix

Cozying up to Windows NT, **Hewlett-Packard Co.** is starting to push PC products through its direct sales force. HP has mainly used resellers for its PCs and PC servers. But the company is moving to converge its Unix and PC systems around one HP/Intel Corp. chip architecture due in 1998. PCs will still be delivered to customers by resellers, HP officials said. The direct sales switch was announced as part of a reorganization that also split HP's systems businesses into separate commercial and technical units. HP will further detail plans for integrating its NT and Unix offerings at a strategy briefing for reporters this week.

WhatsUp with that?

Ipswitch, Inc. in Lexington, Mass., this week will ship WhatsUp, a tool for monitoring the health of any server or device on a TCP/IP network. WhatsUp software tells users what is up and what isn't responding on the network. Price is $145.

Java gets visual

ParcPlace-Digitalk, Inc. and **IBM** are developing visual development environments for Sun Microsystems, Inc.'s Java Internet development language. ParcPlace-Digitalk in Sunnyvale, Calif., has unveiled Parts for Java, which lets developers build applets without writing any Java code. The tool set will be available in July.

Cisco profit soars

Cisco Systems, Inc. posted a profit of $229.7 million for the third quarter ended April 28, up 84% from $125 million in the same quarter last year. The growth came despite a $95.8 million charge for the purchase in January of LightStream Corp. Cisco in San Jose, Calif., reported sales of $985 million, up 93% from $510 million the same quarter last year. Cisco's $4 billion acquisition of StrataCom, Inc. will be reflected in this quarter's earnings.

The Gigabit Dozen

Twelve networking vendors last week announced the formation of the Gigabit Ethernet Alliance. The group will develop products and standards that will let users run Ethernet at 1G bit/sec. — 10 times faster than 100M bit/sec. Fast Ethernet.

Groupware on the 'net

CompuServe, Inc. and **Netscape Communications Corp.** will provide Internet-based groupware services by fall. CompuServe will offer groupware services based on Netscape's browser and server software and the discussion forum capabilities of its Collabra Software unit. CompuServe already offers groupware services that use Lotus Development Corp.'s Notes. Those services will continue.

Cadence, Avanti get chippy

Cadence Design Systems, Inc. and **Avanti Corp.** have become the Hatfields and McCoys of the computer chip software design world. In their battle of courtroom barbs, Cadence has accused Avanti's top managers of stealing Cadence trade secrets by exploiting employees whom Avanti hired away from Cadence. Meanwhile, Avanti alleges that Cadence, the nation's largest design automation company, is trying to squash a successful young rival with a bag of tricks that includes a scheme to drive down the smaller company's stock price.

CA's Next Generation

Computer Associates International, Inc. this week will announce that its CA-Unicenter/The Next Generation software is about to enter beta testing.

Font format fix

Microsoft Corp. and **Adobe Systems, Inc.** will collaborate on a new universal font format dubbed OpenType that combines TrueType and Type 1 font technologies.

Sun to unveil 'thin' OS

Sun Microsystems, Inc. and **Oracle Corp.** on May 20 plan to announce common specifications for Internet client devices. Sun also will detail plans for a barebones operating system based on its Java language.

Palmer finds Wellspring

Jonathan Palmer, 53, chief technology officer at **Barnett Banks, Inc.**, resigned to become CEO at Wellspring Resources, a provider of benefits-outsourcing services. Both companies are in Jacksonville, Fla.

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PC prices remain in free fall

By Bob Francis and Tim Ouellette

The price cuts are coming fast and furious as PC vendors intensify their battle to gain market share.

Market-leading Compaq Computer Corp. in Houston this week cut prices of its desktop machines by as much as 28% and prices of its servers by as much as 14%. Last week, it was Dell Computer Corp. in Austin, Texas, that dropped prices of selected desktops by as much as 20%.

Unfortunately for the vendors, the price cuts don't seem to be spurring corporate buyers to add dollars to established budgets.

"As for the price reductions fueling our hardware decisions, they don't," explained Bart Everett, deputy systems editor at the *Los Angeles Times*. "We figure out what we need and budget for it a long time in advance. Price reductions just make it a good deal, but that doesn't mean we're going to buy more machines," he said.

That raises the question of how long PC vendors can continue to leapfrog one another in a mad dash to be the low-price leader.

"The PC vendors are under really aggressive margin pressure," said James Poyner, a market analyst at Oppenheimer & Co. in New York. "They're selling more and enjoying it less, as their margins are taking a beating," he said.

Product price cuts of 25% can't go on forever, said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. But there are two factors that make the price drops less dramatic than they seem.

Selective price cuts

First, companies aren't dropping prices across an entire product line. "The cuts are being made strategically to protect market share in many cases," Zwetchkenbaum said.

Compaq, for instance, introduced a 180-MHz Pentium Pro ProLinea March 4. The company last week dropped the price of the ProLinea 26%, from $4,299 to $3,199. But the price cut was made on one specific model.

Second, the PC vendors are to a large extent simply passing along price free falls for memory, hard drives and processors. For example, Intel pulled out the knife twice this year and dropped the price of its 150-MHz Pentium processor from $547 last year to $428 in late January and then to $364 two weeks ago.

Sales up

Most analysts said they expected between 17% and 20% growth in PC sales this year.

Meanwhile, memory prices have dropped sharply; 8M bytes costs $105, down from $210 at the end of last year. Drive manufacturers also are in a squeeze. The price of 4G-byte drives has dropped from $800 last year to $575 this year.

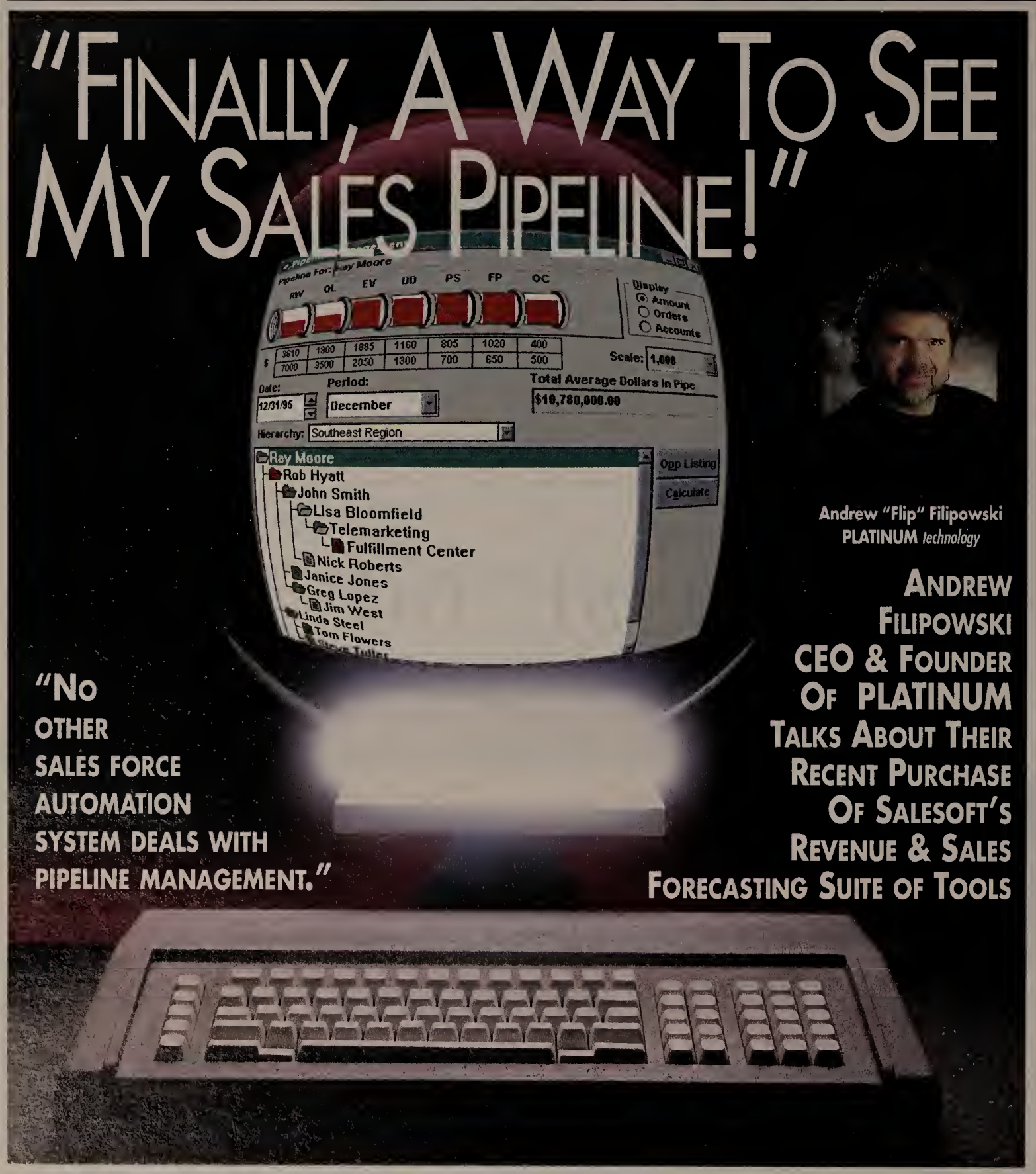
And, according to some industry officials, the current battle is over who can pass component price cuts more rapidly to the market. The direct vendors — Dell and Gateway 2000, Inc. in Sioux City, S.D. — appear to be in the catbird seat. They avoid the reseller channel, which maintains large inventories of PC products.

But others — Compaq, IBM and AST Research, Inc. in Irvine, Calif. — are moving to shorten that lead time by moving to "build-to-order" manufacturing systems.

Not all recent price cuts can be attributed to cheaper components. "Some of the cuts are to maintain market share, and the cost is to the bottom line," Poyner said.

More price cuts are probably in store, even though several vendors, including Compaq, Hewlett-Packard Co. in Palo Alto, Calif., and Dell, are expected to add new systems soon. "No one wants to lose any market share," said a product manager at one vendor.

Intel's Pentium Pro price cuts may not push product. See page 39.



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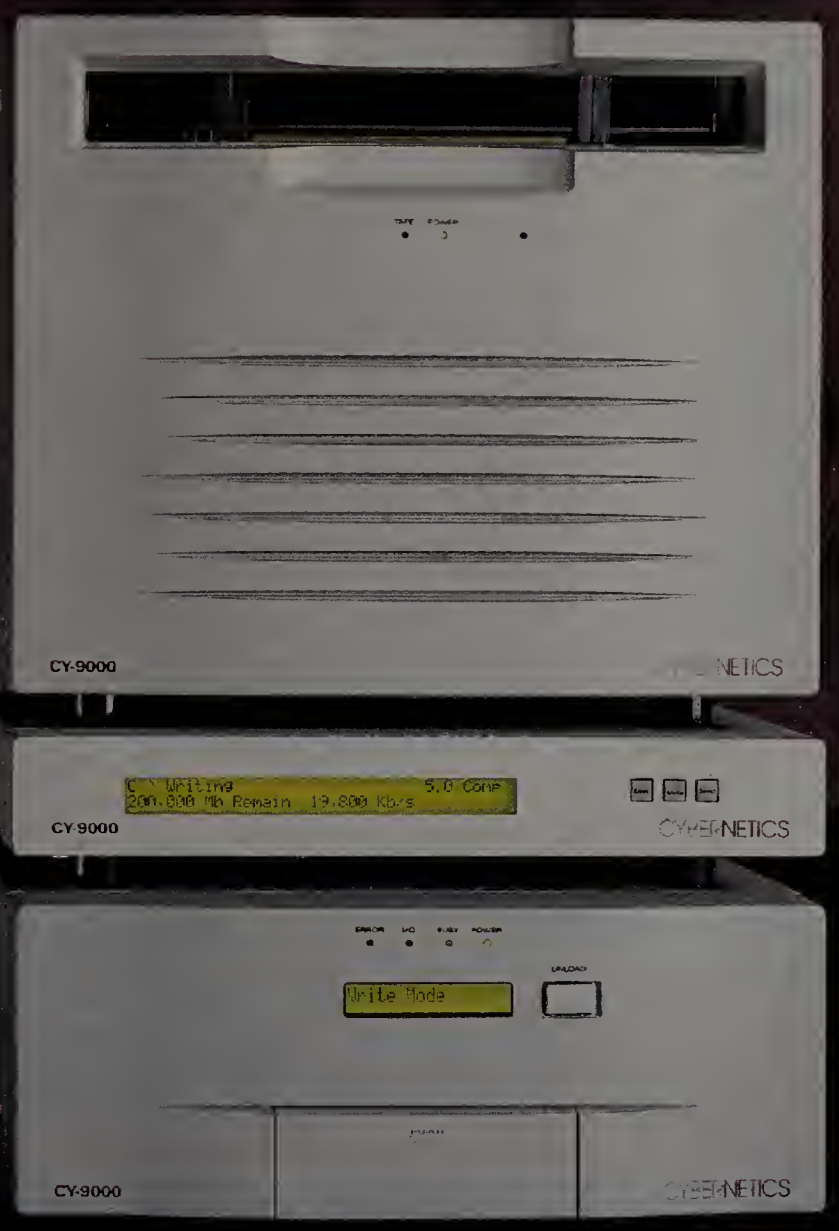

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Because slow backup and restore can cost you *plenty* — in system time, in delayed customer response, and in wasted resources.

The CY-9000 half-inch digital DTF drive is a breakthrough in performance that slashes backup and restore time while providing unsurpassed reliability and data integrity.

No other tape drive can match it.

1/2" Technology	Transfer Rate (Native)**	Tape Capacity (Native)**
CY-9000 DTF	12 MBS	42 GB
3590	9 MBS	10 GB
VHS	8 MBS	27.5 GB
3490	3 MBS	800 MB
DLT 4000	1.5 MBS	20 GB

* *Sentry Market Research*

** *All drives, except VHS, are available with data compression.*

The cost of system time varies from site to site, but a recent study has put the cost of a medium sized PC LAN at ***$18,000 per hour*** — and the cost of a UNIX network at ***$30,000 per hour***.* Numbers like that make it easy to understand how a backup/restore solution that can do its job faster can save you serious money.

For example, for a single 40 GB restore, the CY-9000 will save you...

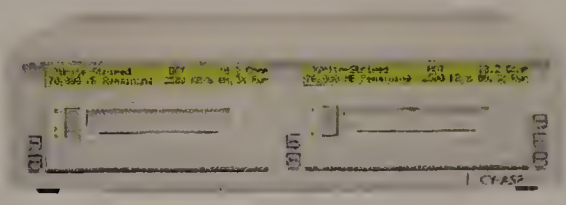
$9,000 over 3590,
$13,500 over VHS,
$83,100 over 3490, **and**
$194,100 over DLT.

And you won't need to change tapes...

4 times with 3590,
2 times with DLT, **and**
50 times with 3490.

The CY-9000 can store 42 GB uncompressed on a single tape, at 12 MB per second. Optional data compression can boost tape capacity to up to 210 GB per tape and speed to 20 MB per second — for the fastest backup in its price range.

Based on field-proven helical scan recording technology, the drive is available with Fast/Wide SCSI, ESCON, IBM Channel, and Parallel Data Channel interfaces for plug compatibility with the widest range of computer systems. A 32 MB data buffer speeds throughput, and you can add up to an additional 128 MB of *variable rate buffer* to handle the most demanding data collection applications.



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SAP savings

SAP's Business Engineering Workbench will help users cut consulting costs such as the following:

Type of consultant	Daily labor rate**
Big Six partner/project supervisor	$2,500 to $3,500
Project leader	$2,000 to $2,500
Senior consultant	$1,500 to $2,000
Module consultant	$1,200 to $1,800
ABAP* programmer	$800 to $1,600

*SAP's proprietary programming language **Doesn't include travel and living expenses

Source: IBM's SAP Consulting and Services

SAP simplifies R/3 installation

New tools reduce cost, configuration time

By Julia King

SAP AG last week announced a comprehensive set of software tools designed to simplify installations of its notoriously complex R/3 enterprise software system.

The new tools — known as the Business Engineering Workbench — promise to slash millions of dollars from users' implementation costs by reducing the need for high-priced R/3 consultants.

Software tools

"If [R/3 system] configuration used to take up 40% of your time, you can probably cut that in half with these tools," predicted Mike Capellas, a former R/3 user and now an analyst at The Benchmarking Partners, Inc. in Cambridge, Mass.

The package combines more than 800 business processes and 170 R/3 business objects with graphical tools used for navigating an R/3 system. Users configure the system by selecting processes in the R/3 implementation management guide and linking them to an online version of the R/3 reference model.

A thing of the past

Until now, users have had access to only a stand-alone R/3 reference model. As a result, it could take days — and even weeks — to figure out the correlations between a certain set of processes and the corresponding R/3 tables. That's why much of the early design work has been farmed out to consultants with R/3 expertise.

Now, with automated links between business processes and the R/3 model, nontechnical users can more easily do the same configuration design work.

"The [new] implementation guide basically organizes the whole configuration for you. It walks you through the processes, then takes you to the R/3 tables so you can configure as you go along," said Patricia Chorney, an application analyst at International Management Group, a sports management firm in Cleveland.

The system is simple enough that "a non-IS person can absolutely use it to configure R/3," she said.

International Management's own implementation team comprised 10 accountants and only two information systems staffers.

Part of the package

SAP's Business Engineering Workbench also includes a series of application programming interfaces to other third-party R/3 implementations tools. These include modeling and simulation software from IDS Prof. Scheer, Inc. in Chadds Ford, Pa.; Visio Corp. in Seattle; and Intellicorp, Inc. in Mountain View, Calif.

SAP also announced a major overhaul of its R/3 training program [CW, April 22]. Changes include an emphasis on hands-on training, rather than formal classroom instruction, and as much as a 10-week reduction in overall training time.

Before, as much as 75% of SAP training took place in the classroom and was led by an instructor, company officials said. Now, only about 25% is instructor-led. During the other 75% of the time, users at classroom workstations practice on an R/3 system.

Why business and IS can't align. See page 39.

Merrill Lynch invests in NT

Brokerage upgrades desktops, rolls out system to 25,000 users

By Thomas Hoffman

Merrill Lynch & Co. is bullish on Windows NT.

The New York brokerage is rolling out Microsoft Corp.'s desktop and server operating system to 25,000 users as part of an $800 million plan to upgrade systems for its financial consultants.

The contract is Microsoft's second major coup in the financial services sector in recent weeks. Smith Barney, Inc. and its parent, The Travelers, last month announced plans to buy 20,000 Compaq Computer Corp. PCs and 500 Compaq servers that will all run Windows NT under a $170 million deal.

Two contracts don't make a trend, but many banks and brokerages are betting on Windows NT as the platform of the future as they shift away from the Unix and IBM OS/2 systems they began using in the late 1980s.

"We looked at OS/2, which is a very good platform, but we felt NT is the future," said Ritch Gaiti, a first vice president and director of advanced office systems and technology at Merrill Lynch's Princeton, N.J., office.

Merrill Lynch's Ritch Gaiti *says NT is the future*

Gaiti said OS/2 lacks "longevity and acceptance," and Unix "wasn't appropriate to support our branch-office environment."

These moves are an example of Wall Street's shift to Windows NT, according to Bob Rossettie, a financial services industry consultant at Ernst & Young in New York.

Windows NT integrates more easily than Unix or OS/2 with the Windows PCs that most financial services customers are using at home and at work. And most third-party banking and brokerage applications are being written for Windows NT, Rossettie said.

Merrill Lynch's new Trusted Global Advisor system was designed to give the financial consultants enhanced analytical and financial planning tools.

The goal is to improve service to 4 million private clients in the U.S. when the system is rolled out in the next 18 to 24 months, starting this September, Gaiti said.

The system replaces Merrill's 7-year-old Professional Information System, which used Intel Corp. 286-based PCs to access IBM DB2 mainframe data.

Merrill Lynch's Trusted Global Advisor system still will access IBM mainframe data and applications. But the firm is testing a graphical user interface to help consultants interact with market data and several hundred company applications "in a more logical and intuitive way," Gaiti said.

Windows NT invades Unix space

By Randy Weston

Windows NT is gaining ground on Unix in the corporate server market, according to Sentry Market Research's 15th annual software market survey.

Fifty percent of the 700 information systems buyers polled by the Westboro, Mass., company plan to put Microsoft Corp.'s operating system on their servers in the next few years, up from 38% in last year's survey.

Don't look now

Product	Unix Server	Microsoft NT Server
1995 units shipped	481,607	363,000
Percent change from 1994	4.6%	216%
Number of applications supported	More than 10,000	1,500

Source: International Data Corp., Framingham, Mass.

Conversely, 49% of the Fortune 1,000 companies surveyed said Unix would play a major role in their future server strategy, down from 74% last year. The percentage of respondents undecided about Unix's place in their company jumped from virtually nothing to 32% last year.

"It's clearly the impact of NT and the significant rise in stature of NT that is having an effect on companies' system decisions," said Bill Gannon Jr., vice president of research at Sentry Market Research. "Companies are not throwing away their Unix systems, but they are reevaluating the role NT will play."

Even traditional Unix strongholds such as the scientific community are moving toward NT.

J. Briscoe Stephens, advanced scientific systems coordinator at NASA's Marshall Space Flight Center in Huntsville, Ala., is leading the charge to bring NASA's 40,000 computers into the NT environment. Of the 8,000 machines in his department, almost all run NT. But Stephens said he still has to maintain a few Unix servers because of the expense to replace them and to accommodate those who aren't willing to give up Unix.

"What real reason is there to stick with Unix other than you've got a legacy system and you don't have the money to replace it?" he said. "A number of the Unix servers are getting old and tired, and we're not replacing them."

But Unix has its supporters. Dunlop Tire Corp. in Amherst, N.Y., chose a Unix server environment three years ago, before NT hit the market. Dennis Courtney, the firm's vice president of logistics and IS, said he would make the same decision today.

"NT would not be robust enough to run our manufacturing systems. Even if it was robust enough, there are not enough commercial applications available for us" that run on NT, Courtney said. "As far as communication between the mainframe and client/server and transferring files and scheduling and backups and recovery, the Unix stuff is just starting to get robust, and it took a while. I think it will take NT a while, too."

But Courtney isn't writing off NT. His office is testing it and finds it to be "very flexible and needing very little care." If later versions are more scalable and have the level of applications available for Unix machines, he said his firm would consider making the switch after the year 2000.

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HEWLETT PACKARD

HP goes commercial with parallel processor

By Craig Stedman

With an eye toward large data warehouses, Hewlett-Packard Co. this week plans to jump in to the commercial parallel processing market.

Sources familiar with HP's plans said the company in June will offer a parallel processor that will cluster up to 16 HP 9000 K-class midrange servers in a single rack. That will allow a maximum configuration of 64 processors.

The sources said a much larger model that supports HP's high-end T-class boxes will be released in the fall. The T-class boxes can each run up to 14 CPUs.

The two systems, the EPS21 and the EPS30, are the first members of HP's Enterprise Parallel Server line to target commercial shops. A smaller EPS20 machine that shipped in the first quarter was limited to technical computing uses because of its communications bandwidth shortcomings. The lack of bandwidth is corrected in the new systems with a Fibre Channel interconnect.

Bigger and better

Users familiar with the EPS plans said the machines should make it possible to build larger data warehouses on top of HP's market-leading Unix systems.

CNA Insurance Co.'s Personal Lines division is "already bumping up against the limits" of a four-processor K400 machine with 96G bytes of information in its data warehouse, said Dwight Wolfe, manager of Unix systems at the Chicago firm. Plans call for the amount of data to expand to 150G bytes this month and almost 300G bytes by year's end.

"The data warehouse is a resource hog. It just eats everything you give it," Wolfe said. "The ability to string multiple computers together would be fantastic."

Clusters make three

HP's Enterprise Parallel Server line of clustered Unix systems includes the following models:

Model	Supported servers	Number of SMP nodes	Communications bandwidth	Availability
EPS20	K class	8	100M bit/sec.	Shipping
EPS21	K class	16	1G bit/sec.	Q2
EPS30	T class	16	1G bit/sec.	Second half

CNA's Personal Lines unit already uses HP's regular Unix clustering technology to link pairs of K-class servers, but those systems operate independently and are linked only to provide a back-up in case one crashes, he said.

By contrast, the EPS machines are packaged as single systems in which processors can share databases and tap in to unused resources on other nodes when they become overburdened.

"I'm sure that's something we'd be interested in taking a look at down the road," said Dave Byelene, manager of computer operations at Camelot Music, Inc. in Canton, Ohio. The music retailer, which uses a high-end HP T500, has a development team exploring data warehousing, he said.

The EPS21 and EPS30 will compete with IBM's RS/6000 SP parallel processor, which currently uses only single-CPU computing nodes. But long-delayed support for symmetrical multiprocessing (SMP) nodes is expected to materialize on the RS/6000 SP this summer, analysts said.

NCR Corp. is also marketing a parallel system that ties together multiple SMP servers.

The Fibre Channel interconnect that will link the two commercial EPS machines provides bandwidth of 1G bit/sec., 10 times faster than the Fiber Distributed Data Interchange technology used on the original EPS20, the sources said.

The parallel systems could be used for transaction processing, but HP needs to add its 64-bit PA-8000 microprocessor to put them in the same class as Sun Microsystems, Inc.'s new Ultra Enterprise servers, said Jean S. Bozman, an analyst at International Data Corp. "This is not the answer to Sun," she said.

& **Microsoft's SQL Server** lags rivals in the Unix market. See page 48.

HP will add clustering to high-end NT servers

By Bob Francis and April Jacobs

Hewlett-Packard Co. will introduce a high-end PC server with clustering capabilities later this month, *Computerworld* has learned.

HP in Palo Alto, Calif., plans to announce its new NetServer LX line of departmental servers on May 27. Based on Pentium Pro chips, the quad-processor-capable system is designed for Windows NT applications.

Servers

HP's clustering offering on the NetServer line will initially be designed for simple backup, sources said.

Plenty to choose from

Slated for delivery in June, the new LX series will join a crowded NT field that includes PC market leader Compaq Computer Corp. in Houston, IBM in Armonk, N.Y., and even mainframe vendors such as Amdahl Corp. in Sunnyvale, Calif. Compaq also is expected to introduce its new servers in June, sources said.

Despite the flurry of vendor activity, corporate users may not immediately embrace these new high-end PC servers.

Bert Loveland, a consultant at Talus Group in Minneapolis who works with Northern States Power Co. in Minneapolis, said the company will stick with its SPARC servers from Sun Microsystems, Inc. for heavy-duty applications.

However, he said Windows NT clusters are "inevitable."

"We use NT servers as resource and account servers and for file- and print-sharing applications. But for heavy-duty database things, we're using Sun Solaris," he said.

However, a company such as HP may have a better opportunity to make headway into central information systems departments, said John Dunkle, president of Workgroup Strategic Services, Inc., a consulting group in Portsmouth, N.H. "HP's thrust has always been at the enterprise level, so they may have a better shot offering these systems to IS departments than traditional PC vendors," he said.

A passel of vendors, including Compaq, Amdahl, Digital Equipment Corp., HP and IBM, plan to offer clustering capabilities for Windows NT.

Microsoft Corp. will integrate clustering into the NT Server operating system early next year. Most vendors are expected to support the integrated NT clustering technology at that time but may also support alternative clustering technologies, analysts said.

Object vendors promise wares that work in harmony

By Frank Hayes

Corporate developers trying to use object technology are getting long-needed help from vendors. This includes last week's deal among three vendors that are trying to make sure their software works together. But that's just the beginning of what users need.

Corporate object developers also need help from application vendors such as SAP America, Inc., according to users at last week's Object World trade show in Boston. What users really want are packaged applications and business components that will plug in to the object-oriented frameworks already available.

No timetable

In the meantime, IBM, Apple Computer, Inc. and Iona Technologies Ltd. said last week they will swap information and engineers to make sure their object systems work together smoothly. But the vendors wouldn't provide a timetable for when these better-integrated products would be ready.

"There are some tedious things you have to do" to make products from different vendors work together today, said Carol Burt, technical director at BellSouth Telecommunications Corp. in Birmingham, Ala., which is building an object infrastructure. Distributed applications often require developers to create functions for security, transactions and even naming services, she said.

For object development, users still need the following:

- Smoother integration between different object middleware products
- Standardized business objects that can be plugged together to form applications
- Packaged applications that meet object standards

Officials at the companies said the joint work will help ease those problems by guaranteeing that Iona's Orbix object system works smoothly with IBM and Apple products — including OpenDoc components, CICS transaction processing and MQSeries messaging. IBM and Apple both use IBM's System Object Model middleware; the Dublin-based Iona's Orbix runs on a wide variety of platforms, including Windows.

But making object-oriented middleware from different vendors work together is only the first step. "We want plug-and-play business objects and applications for things that are the same in every enterprise, like finance," said John D. Johnston, a technology planning program manager at Sprint Corp. in Overland Park, Kan.

"If I'm building an accounting system, I want to work with standard financial objects," said Rich Lemieux, lead architect at Aetna Life and Casualty Co. in Hartford, Conn.

That means vendors such as SAP, Dun and Bradstreet Software Services, Inc., SSA, Inc., Marcam Corp. and Software 2000, Inc. will have to adopt common standards for the business components embedded in their finance and manufacturing systems.

Those five vendors said this week at Object World that they are working on common standards. And SAP this week announced a suite of tools that will give corporate developers easier access to the business components in its R/3 business system. But the vendors agree it will be several years before they will be able to support standardized components as part of their products.

& **What's IS doing** with Java right now? See page 85.

Tandem to enable fault-tolerant NT

CONTINUED FROM PAGE 1

Tandem's reputation for fault tolerance to Windows NT, a server operating system gaining market momentum but still lacking the reliability and scalability that large businesses require.

At the same time, a vote of confidence from industry behemoth Microsoft in Redmond, Wash., gives the recently sluggish Tandem in Cupertino, Calif., a mind-share boost.

Christopher L. T. Brown, a leader of the San Diego Windows NT Users Group, said the Microsoft/Tandem alliance should remove doubts about NT's reliability.

Key points of Tandem/Microsoft agreement:

- Tandem will make Windows NT version of its fault-tolerant database, messaging and transaction- monitoring software.
- Microsoft clustering software will come ready for Tandem server interconnects.
- Tandem will sell NT servers with Intel chips.

"When you look at clustering technologies and the mission-critical area, [Tandem] has the market . . . , and that's probably the one area that may have made some Fortune 500 companies hesitant to make a migration [to NT]," said Brown, who runs Final Bit Solutions, a World Wide Web consulting business in Chula Vista, Calif.

Bill Honaker, president of the International Tandem Users Group, said bringing Tandem's proprietary capabilities to Windows NT would help information systems shops that use Tandem and Microsoft.

"It supports the existing Tandem customer base and gives them a growth path into an open environment," said Honaker, a systems consultant at XID Software, Inc. in Euless, Texas.

Coming to terms

Under the Microsoft/Tandem deal, Microsoft's WolfPack clustering software for Windows NT will support Tandem's ServerNet high-speed server interconnects. The first version of WolfPack is due early next year, Microsoft officials said.

The deal also calls for Tandem to build its own NT servers. Tandem officials said the Intel Corp.-based machines would be available this summer. Prices will start at about $30,000. Tandem will train more than 1,000 of its technical support staff on NT.

Some analysts compared the Tandem pact to a deal Microsoft announced with Digital Equipment Corp. this past August. That deal also included clustering technology and is expected to boost the scalability of NT servers.

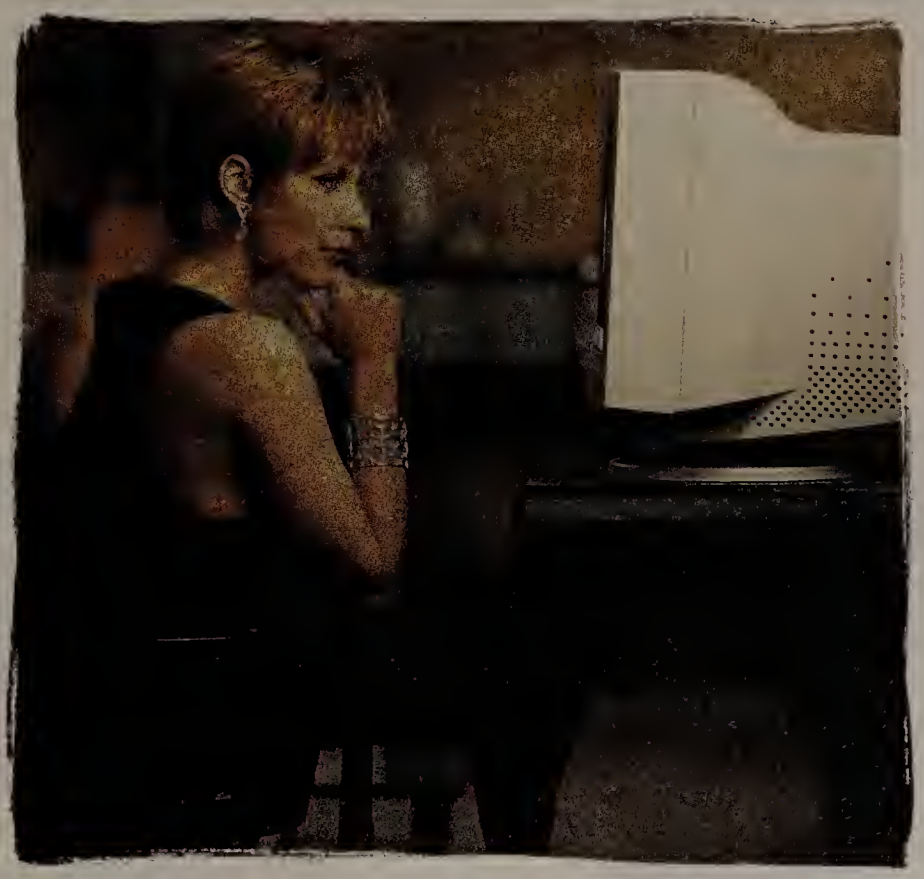
Besides its clustering technology, Tandem is handing over its ServerWare, valuable middleware that has made Tandem's Himalaya servers high-performance business systems.

Observers said making a strong play in the NT market is a critical move for Tandem, which is known as a proprietary hardware vendor that needs to branch out into open systems. "Basically, Tandem gave their crown jewels away," said Jim Johnson, an analyst at The Standish Group International, Inc., in Dennis, Mass. "In this marketplace, it's hard for a proprietary vendor to keep their inventions to themselves. If you do, you end up atrophied."

Analyst Richard Winter, president of Winter Corp. in Cambridge, Mass., said Tandem's embrace of Windows NT brings openness to its user base. "It will mean a Tandem customer can build a database solution on a Tandem platform with the confidence that they can later move it to a different hardware platform on NT if they wish," Winter said.

Senior editor Laura DiDio contributed to this report.

EUROPEAN ART COMES TO THE SCREEN, WITHOUT THOSE ANNOYING SUBTITLES.



From the continent that gave us museums and luxury automobiles come their combined spiritual equivalent: Nokia monitors. Nokia is already a household name (and cafe and office name too) throughout Europe. And now Nokia monitors are quickly winning the hearts and eyes of Americans too.

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Recall sours pricing plan

CONTINUED FROM PAGE 1

repair facility to be refurbished or replaced.

The news came just days before Apple Chairman and CEO Gilbert Amelio is slated to outline his fix-it plan for the struggling company [CW, May 6].

A key part of the plan, to be announced today at Apple's Worldwide Developer Conference in San Jose, Calif., is to begin charging users more for future Apple-branded machines.

The sting of Apple's proposed premium pricing plan is magnified by the fact that the flawed systems — most Performa home PCs and many systems sold to elementary, junior and high schools — hit the core and most price-sensitive customers that Apple needs to hold on to.

"I don't think Apple can get away with charging more than they already do for their machines," said Lenny Pitts, an analyst at Technology Business Research, Inc., a market research firm in Hampton, N.H. "Right now, the perceived value of Apple machines is down."

One user who recently purchased 75 of the Power Macintosh 5200 models is very angry. "I feel like I now have egg on my face," said Kevin Kelly, coordinator of technology and media at Plymouth Public Schools in Plymouth, Mass. The school district has 300 Macintoshes, 400 Apple IIs and 400 PCs.

"I have a boss who bleeds blue, and up to now, convincing him that we should be buying Macs has been difficult. Now it will be nearly impossible," he said.

Kelly said none of the Macintosh clone makers are positioned to serve the education market.

"Instead, we would have to consider a PC maker like Compaq, which has done an excellent job of [targeting] the education market," Kelly said.

He said he has been having trouble with the 5200s since earlier this year but that "Apple was good at denying any problems."

But Apple is starting to face up. According to published reports, Fred Forsyth, Apple's senior vice president in charge of manufacturing, said, "We've had more quality issues than we've been used to" in the past nine months.

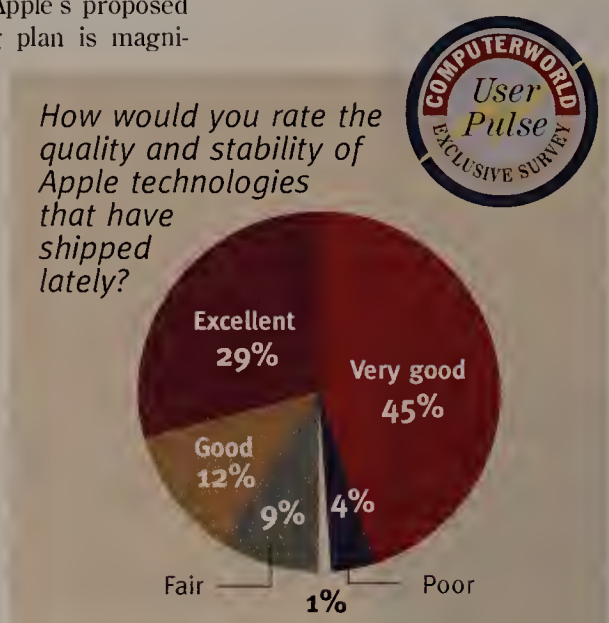
Random calls to four Macintosh users revealed there are quality issues with other machines as well, particularly the Power Macintosh 8500.

Mark Stelzner, director of editorial publishing systems at Gruner & Jahr USA Publishing in New York, said he has been struggling with the Power Macintosh 8500s.

"The latest issue is that we cannot run Mac TCP, and a lot of the Internet service providers don't support Apple's Open Transport protocol. In general, we have had a lot of crashes; as a group, the 8500s just seem to be unstable," he said.

The instability of so many Macintosh models has some users rethinking purchases.

"Now we will bring in one Apple machine and test it before buying any more," said John Papa, a partner at The Carson Group, a financial services company in New York. "Before, we never questioned the quality of Apple's product. But then again, we had no choice, and now we do" with Macintosh clone makers.



Solution to this week's crossword puzzle

Charles, Jim and Larry aren't sooooo! They run CA, Netscape and Oracle respectively. And our dream team is rounded out with Bill Gates, Spindler and Gerstner. Oh, and there are a few other barbs thrown in for good measure.

Apple Computer set to unleash Cyberdog

Applet suite lets users access the Internet from Mac apps

By Lisa Picarille

Attempting to take a big bite out of the Internet market, Apple Computer, Inc. is expected to announce its Cyberdog Internet technology this week.

Cyberdog, unveiled at last year's Apple Worldwide Developer Conference, is an OpenDoc-based suite of applets that will let users directly access the Internet from within Macintosh-based desktop applications.

Add-on attitude

Apple's tack with Cyberdog is similar to Lotus Development Corp.'s Lotus Component strategy, which makes small applets available as an add-on to Notes developers who are creating applications.

According to sources close to the Cupertino, Calif., computer maker, Cyberdog makes components available to developers, who can embed them in their OpenDoc applications. The first round of Cyberdog components, due out this week, includes modules for graphing, charting, videoconferencing, word processing and creating spreadsheets.

Another bright spot that Apple is sure to trumpet at this week's developer's conference is that last week IBM finally made good on its commitment to license the Mac OS.

IBM's Microelectronics Division will sublicense the Mac OS to vendors that purchase PowerPC chips. However, IBM has no plans to make Macintosh clones itself, according to company officials.

The IBM/Apple licensing deal is similar to an agreement Motorola Computer Group signed with Apple in February. However, Motorola has licensed the Mac OS to make complete Macintosh clone machines and motherboards.

IBM plans to focus on aiding other Macintosh clone makers. Datatech Enterprises Co. and Tatung Co. have already inked deals to sublicense the Mac OS from IBM.

They've got work to do

But some industry watchers agreed that to grow the PowerPC platform, IBM has to persuade its own IBM PC Co. to build Macintosh compatibles and then entice other hardware makers to become part of the platform.

Apple and IBM also are talking about forming a partnership to jointly develop notebooks and subnotebooks, according to George Scalise, Apple's executive vice president and chief administrative officer.

DEC mail options flood users

CONTINUED FROM PAGE 1

Digital supports Microsoft Exchange for Windows NT installations and is installing Exchange companywide.

But Digital also has a product called OfficeServer in the works that may run on Windows NT and offer an alternative to Exchange.

Previous commitments

Because of Digital's recent efforts to spruce up All-In-1 and other E-mail management products, including adding Messaging Application Programming Interface support and World Wide Web access to users' electronic file cabinets, users say they aren't too worried about the future just yet.

"We are kind of married to All-In-1 for a while because we have developed custom gateways for it," said Matthew Simpson, manager of office automation at Mitsui O.S.K. Lines in Jersey City, N.J.

Simpson said the company expects to stay with All-In-1 for another year. He said the firm then will consider moving to Exchange or even Notes.

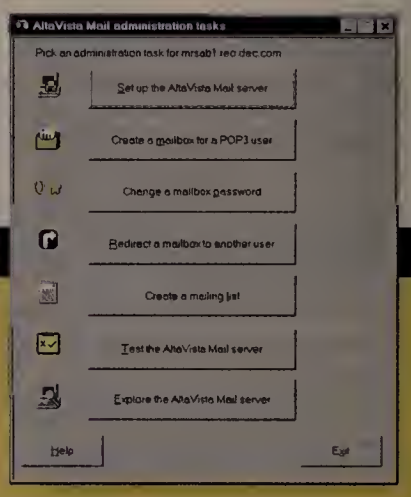
Digital officials wouldn't comment on OfficeServer, although one source confirmed the product was still under development.

Option left open

Originally pitched as a Windows NT product, OfficeServer is mentioned in recent documents from Digital as only a Unix or OpenVMS upgrade to All-In-1 and MailWorks that mixes features of both.

Some industry observers said the question of whether OfficeServer will compete with Exchange on the Windows NT platform remains open.

"They may have NT plans and have not mentioned it. This does not mean that they won't do it, especially as it promotes sales of [Digital] Alpha hardware," Levitt said.



Vista view

AltaVista Mail may attract new users, but Digital still needs to clear things up for its legion of existing E-mail users

Worldwide market for host-based E-mail

	Boxes	Share
Digital All-In-1/MailWorks	7M	23.6%
IBM OfficeVision	6M	20.2%
Fischer TAO	3M	10.1%
Verimation Memo	2.5M	8.4%
Others	11.21M	37.7%
Total installed mailboxes	29.71M	

Source: "Electronic Mail & Messaging Systems," Washington

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   - 12. Vice President, Asst. VP
   - 13. Treasurer, Controller, Financial Officer

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   - 51. Sales & Mktg. Management
   - 70. Medical, Legal, Accounting Mgt.

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   - 90. Other Titled Personnel

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   (b) Netware (f) Windows NT
   (c) OS/2 (g) Windows
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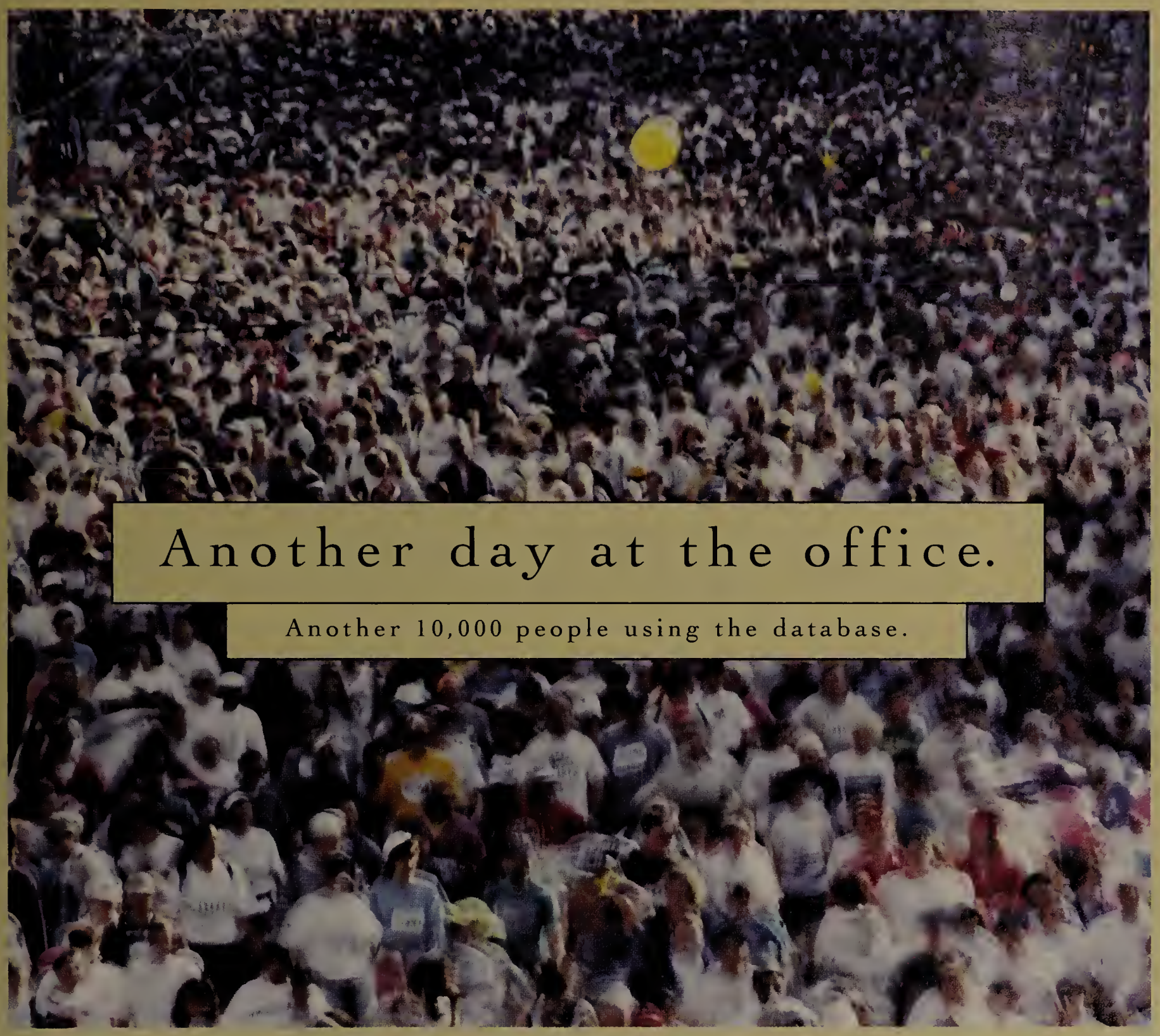

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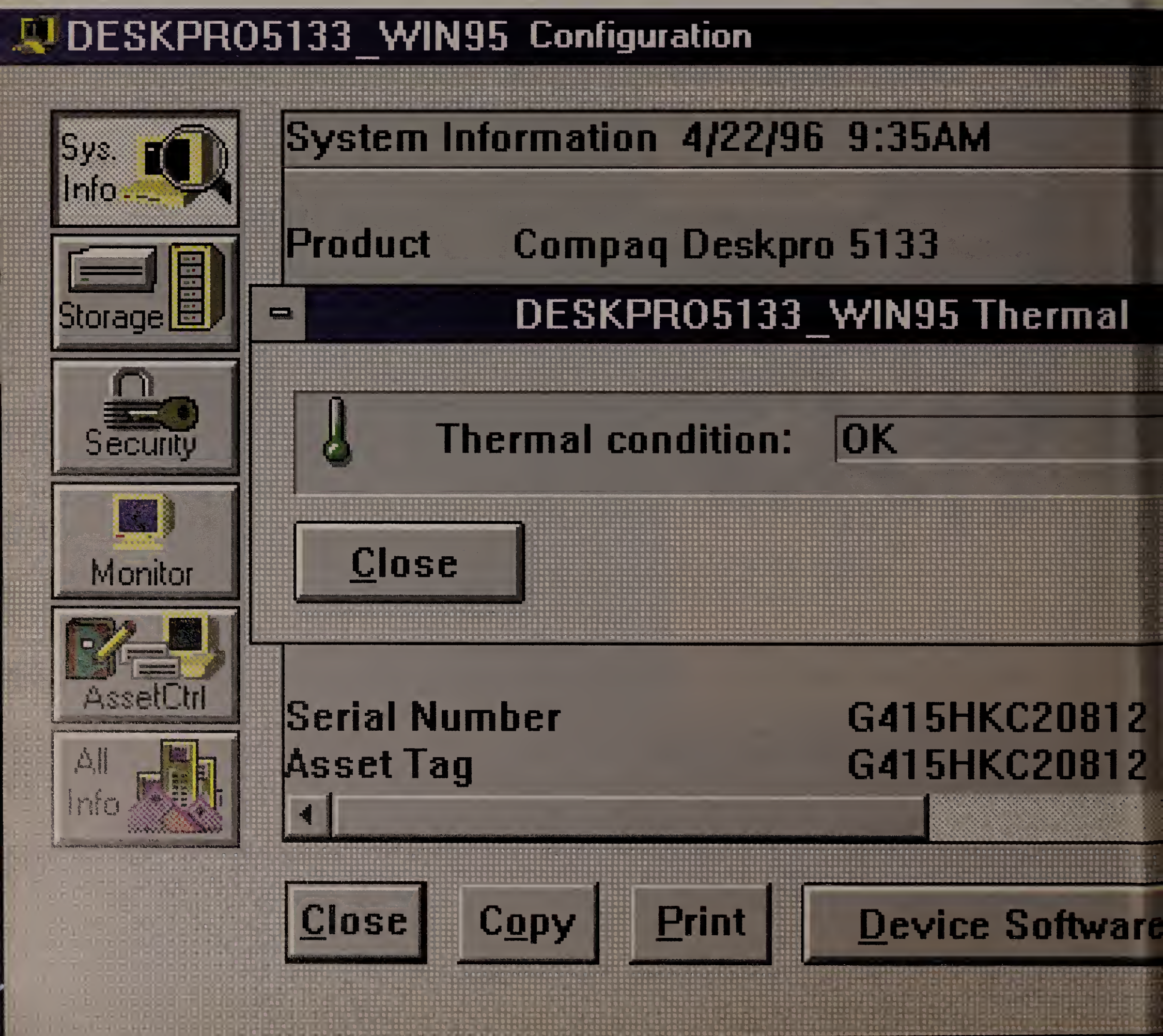

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Switching moves deeper into user networks

By Bob Wallace

Less expensive switches from Bay Networks and Cabletron will make it easier for users to extend switching from the backbone network to the workgroup.

Bay Networks, Inc. in Santa Clara, Calif., last week unveiled a midrange switch that is shipping now and switching devices for its flagship System 5000 and Centillion 100 hubs that will ship in the next few months.

Not to be outdone, Cabletron Systems, Inc. in Rochester, N.H., fanned the Fast Ethernet fire with a stand-alone 10/100M bit/sec. switch and modules for its existing midrange MMAC and flagship MMAC-Plus hubs. They will ship in 90 days.

Longtime Bay user John Dubiel, manager of planning at Boston Edison Co., said that by cutting the price per port from $1,000 to $500 for the stand-alone Model 28200 Modular Ethernet Switch, "Bay is making it much easier for users like us to move switching into the heart of our network from the periphery."

Boston Edison is considering buying the new Bay switch to support client/server computing applications, Dubiel said.

Switching lets information systems managers break large and low-performance LAN segments into smaller segments, which substantially boosts performance. Switching in high-end hubs such as the System 5000 lets users create high-speed building and campus networks.

Boston Edison's John Dubiel *says Bay's price cuts make it easier to move switching in from the periphery*

Almost every vendor delivers high-end switching, but only a subset has been able to reduce the price enough to persuade users to deploy it widely.

"We've wanted to provide switched bandwidth to our Ethernet segments and to high-performance clients, but the price has been too high," Dubiel said.

Fills a need

Analysts say the new switches from Bay and Cabletron address an emerging and important market. "Although most companies buy at a corporate or workgroup level, we're starting to see a new class of buyers that need more than a workgroup switch but less than a full-blown high-end hub," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

"Switching has been difficult because they had to either buy two workgroup switches, which is very expensive, or buy a large hub and only use a small percentage of its capacity," Nolle said.

Cabletron addressed this void with the SmartSwitch 10/100, a stand-alone system with switched and Fast Ethernet support.

"The new switch is very tempting because we have to set up labs and provide switching on a moment's notice," said Stephen Olynyk, network administrator at Avid Technology, Inc. in Tewksbury, Mass. "We can't afford to buy a large chassis hub for these environments, but the new system will enable us to provide 10M or 100M bits of capacity quickly and at a low cost."

Olynyk, whose firm uses Cabletron switches to help support film, video and audio editing and special effects applications, said he likes the vendor's strategy of also supporting Fast Ethernet on its existing hubs.

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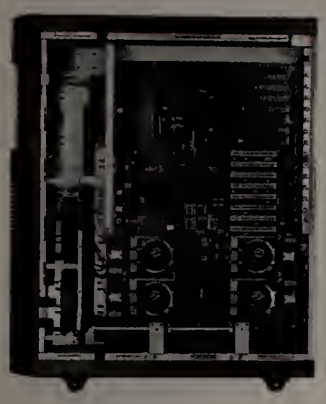

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Tools on tap for Java standard

By Dan Richman

As beta testing nears completion on a specification to let Internet users access multiple data sources, software is being readied to make the spec more widely and immediately useful.

The Java Database Connectivity (JDBC) spec is due out in final form June 8 from JavaSoft, the Sun Microsystems, Inc. operating company in charge of the Java development language.

Applications written to JDBC will be able to access more than one vendor's database management system simultaneously, and they can run unchanged if the site substitutes a different vendor's DBMS.

That prospect appeals to users and developers.

"A lot of home-schoolers want to use Java applets to access homework assignments, health records and test scores kept on a school district's database," said Patty Benskin, vice president of Netel Education Systems, Inc., the Claremont, Calif.-based developer of SchoolNet, a school administration package. "If we had to rewrite our app for each relational DBMS we sell it for, it would be a huge pain."

In the driver's seat

But there's a hitch. Key to such interoperability are drivers — pieces of software that link applications with DBMSs, just as printer drivers link applications with printers. All DBMS vendors, and several other vendors, are preparing JDBC drivers.

Unfortunately for impatient users, many drivers won't be ready for up to three months after the JDBC spec is released.

Users writing to draft versions of JDBC have already been waiting some time for drivers. And for some more obscure DBMSs, JDBC drivers may never be written.

Vendor lineup

Providers of JDBC drivers are Intersolv in Rockville, Md., Simba Technologies, Inc. in Seattle and Visigenic Software, Inc. in San Mateo, Calif.

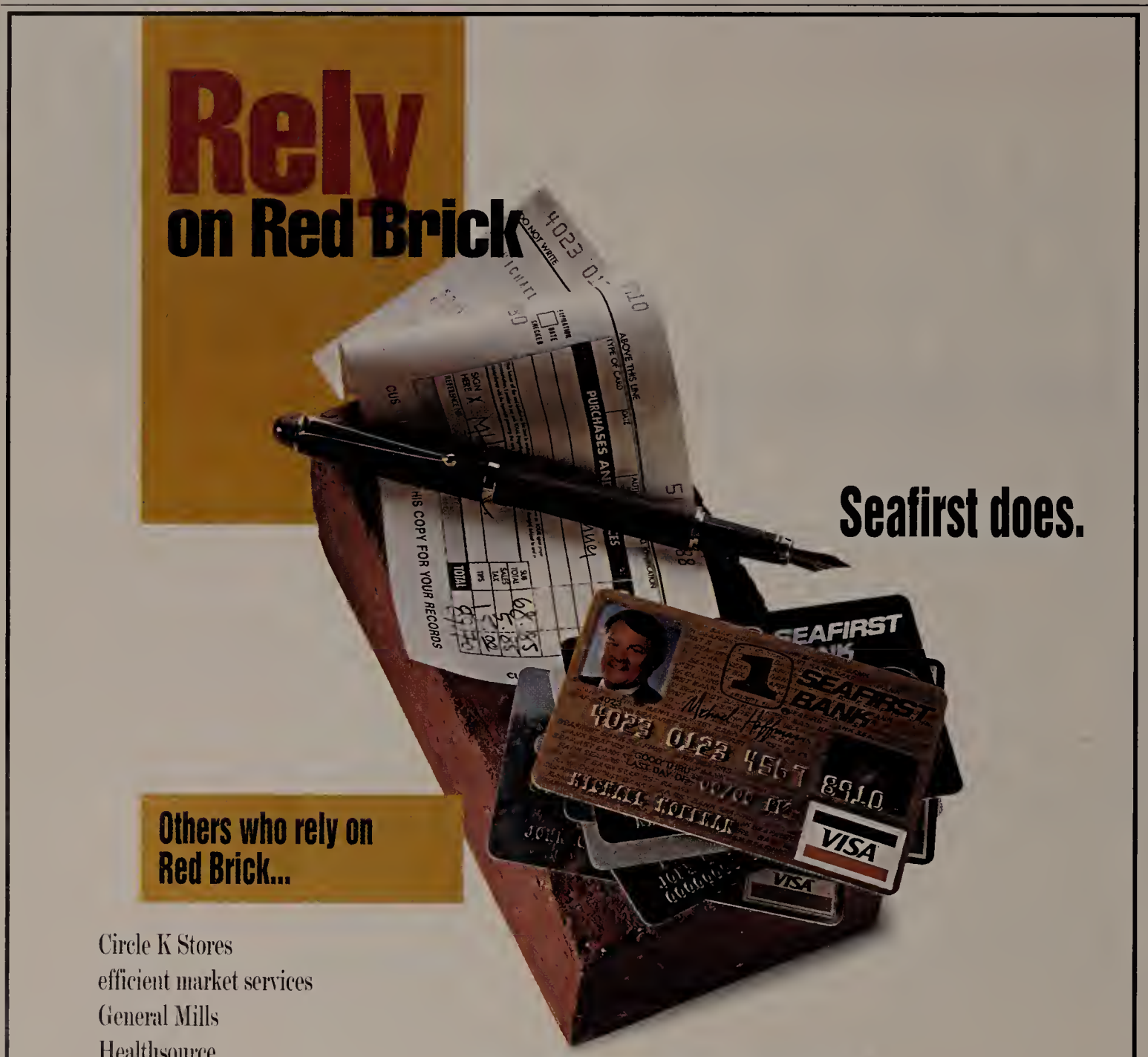
To make JDBC usable sooner and on more DBMSs, Intersolv, Inc. this week will deliver ODBC Bridge to JavaSoft. It lets JDBC applications access any DBMS for which an ODBC driver exists. ODBC (Open Database Connectivity) is a spec for linking Windows applications to DBMSs. Because it has been out for several years, it has a large installed base and is well-understood. It is available for nearly every DBMS on nearly every platform.

JavaSoft, which asked Intersolv to create ODBC Bridge, will begin beta-testing it July 1, making the software available on its World Wide Web site.

"If we could just add a [bridge] layer and keep using ODBC drivers rather than having to add RDBC drivers, it would save us and users a lot of money and aggravation," Benskin said.

ODBC user Stephen Kerns, senior IT technical analyst at Cargill, Inc., a Minneapolis-based agribusiness company, called the bridge "a great idea" but said he is afraid ODBC Bridge might impose a performance penalty. Ed Peters, an Intersolv vice president, said any penalty would be "negligible."

The final version of ODBC Bridge will ship by Sept. 30, along with a suite for testing drivers' RDBC compliance. Both will be free of charge.



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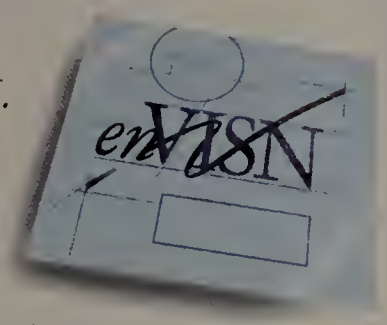

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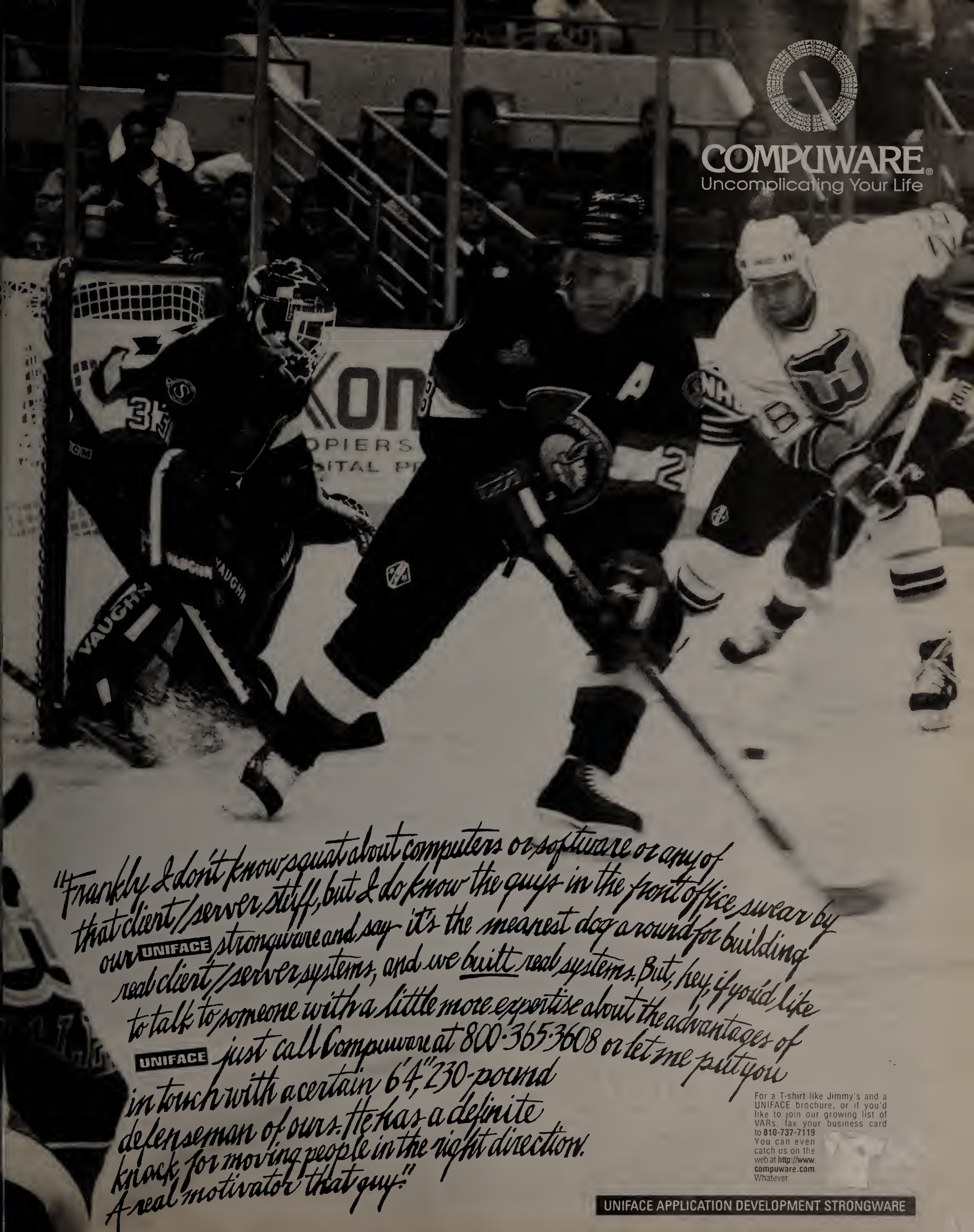
A few thoughts about motivation and UNIFACE application-building strongware from Jim Rutherford, President/General Manager, Hartford Whalers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UNIFACE APPLICATION DEVELOPMENT STRONGWARE

Dislike of government standard isn't cryptic

By Gary H. Anthes
WASHINGTON

The federal government's refusal to adopt de facto commercial standards for encryption is leaving civilian agencies confused and unprotected, critics say.

Indeed, cryptographic standards developed recently by the National Institute of Standards and Technology (NIST) may be headed down the path trod by nonstarters such as the Government Open Systems Interconnection Profile (GOSIP), which was mandated for open systems use.

At issue are government-mandated algorithms for key-escrow encryption, which protect privacy by scrambling data; and digital signatures, which are used to authenticate users and message contents.

Few products implement the federal standards, and commercial users have avoided them in droves.

"Civilian agencies want low-cost, commercial, off-the-shelf products, and the standards set by NIST don't meet those criteria," said Lynn McNulty, president of McNulty and Associates in McLean, Va., and former associate director for computer security at NIST.

RSA vs. Fortezza

The corporate world has generally cast its lot with encryption and digital signature technology licensed by RSA Data Security, Inc. in Redwood City, Calif.

It is used in products such as Windows, Notes and Netscape Communications Corp.'s World Wide Web browser.

The U.S. Department of Defense uses PCMCIA cards for electronic-mail security. Called "Fortezza," the cards use government standards for key-escrow encryption and digital signatures to provide user authentication, data integrity and privacy.

But the cost of such hardware-based security is an obstacle for other users. Fortezza cards cost about $65 each, and the PC device needed to read them can cost $150 or more.

"Civilian agencies have looked at the cost [of Fortezza] and said they can't afford it right now, so they are using unsecure methods," said John Pescatore, a security consultant at Trusted Information Systems, Inc. in Glenwood, Md.

Users want different security standards than the government does

	Government mandate	Industry choice
Privacy (data encryption)	■ Data Encryption Standard (DES) ■ Escrowed Encryption Standard	■ RSA and DES
Authentication (digital signatures)	■ Digital Signature Standard	■ RSA

Jack Finley, who heads a governmentwide E-mail development program at the U.S. General Services Administration (GSA), said affordable secure E-mail for civilian agencies should be available next year.

But he said that might involve using a software implementation of Fortezza, which is likely to meet user resistance because of its incompatibility with commercial standards such as RSA.

Some observers say the GSA doesn't have the clout to reconcile the competing encryption interests. "There is no [standard] civilian agency approach for secure E-mail," Pescatore said. "Unlike the Department of Defense, there is no 'top' of the civilian government; there is no one in charge."

Different opinions

While security experts fret about the lack of interoperable encryption in civilian agencies, that concern clearly isn't shared by all users, many of whom say they can live without E-mail encryption.

"More than 95% of our E-mail requires no confidentiality," said Joseph J. Leo, deputy administrator for management at the U.S. Department of Agriculture's Food and Consumer Service.

Leo said he uses the government's Data Encryption Standard to protect financial transactions but would like the freedom to use other approaches, such as RSA.

"There will be appropriate wake-up calls by government officials that RSA is an acceptable alternative," he said.

"The business world is evolving rapidly to RSA, and I'll evolve with them."

Why you didn't Cyberfile

A year ago, the Internal Revenue Service was considering technology from RSA to verify the digital signatures of taxpayers filing over the Internet in an as-yet unlaunched pilot project called Cyberfile. But something funny happened on the way to the 1995 tax filing season.

NIST last summer sent the IRS a five-page letter explaining why it shouldn't deviate from the Digital Signature Algorithm (DSA) developed by NIST.

Former IRS CIO Henry H. Philcox: *'I was told ... the DSA was a government standard.'*

In a letter dated July 18 to IRS Commissioner Margaret Milner Richardson, NIST Deputy Director Raymond O. Kammer said, "I understand that the DSA is currently less popular than the RSA algorithm. However, I believe that using a [federally] approved signature algorithm offers several advantages to the IRS." Kammer was referring to concerns that unapproved algorithms may not be as secure as those blessed by NIST and the National Security Agency. He also warned that in some cases, government officials could be held liable for any financial losses resulting from the use of unapproved algorithms. Whether it was a result of the letter or not, the IRS later announced it would launch the Cyberfile pilot program this past February using the DSA standard. "I was told in no uncertain terms that the DSA was a government standard, and that it was the standard that must be used," said Henry H. Philcox, the former chief information officer at the IRS.

But IRS officials in March said the agency wouldn't launch Cyberfile this tax season. Soon after, the U.S. General Accounting Office issued a report critical of various aspects of Cyberfile security. "The [NIST] letter caused the IRS to change the direction of the project," said Lynn McNulty of McNulty and Associates. "They got nothing organized for electronic filing." IRS officials declined to discuss Cyberfile encryption or to say when Cyberfiling might begin.

— Gary H. Anthes

A big FAT problem for NT disks

By Laura DiDio

That old dilemma of whether to use FAT or NTFS — or both — to partition Windows NT hard disks has emerged as a potential "gotcha" for users migrating to Windows NT.

The issue recently came to the fore as the number of Windows NT installations rose.

The conflicts between File Allocation Table (FAT) and New Technology File System (NTFS) can be especially problematic for users who install MS-DOS, Windows 3.x or Windows 95 alongside Windows NT Workstation on the same machine.

Or for those who use NT Server in with DOS and Windows desktops.

Microsoft cuts through the fat

	NTFS	FAT
SUPPORTS	Windows NT	DOS, Windows 3.1, Windows 95
SECURITY	Supports access control to the file level	None
RELIABILITY AND DATA INTEGRITY	Data is protected in a crash	None
DISK COMPRESSION	For files and directories	None
RAID SUPPORT	Yes	None
DISK ADDRESSING	64-bit	32-bit

Among the most common problems are the following:

- Users who designate NTFS as the C drive will find that the rest of their drives become invisible, which makes it difficult to locate files.
- Workstation users who run DOS and Windows NT must boot NTFS to access their NTFS files.
- Some users on Microsoft's Windows NT forums reported difficulty in creating NTFS partitions.

Mark Minasi, an expert user and president of Tech-Teach International, a systems integrator in Arlington, Va., said under the FAT scheme, all files are stored "in a single pile, in no particular order. Trying to find a file in a FAT partition is like trying to look up a name in a phone book that isn't alphabetized."

By contrast, NTFS automatically logs files in alphanumeric order. Unlike FAT, NTFS will automatically erect a blockade around damaged areas of the disk, said Mike Nash, Microsoft's group product manager for NT.

Driving blind

But trouble occurs when users fail to read the Windows NT 3.51 manual on how to install NTFS.

Network administrators who fail to specify either an NTFS or FAT setting may be in for a rude awakening. Windows NT can arbitrarily assign a drive or create a partition and give it an unassigned drive with no letter at all.

The issue of invisible drives also is easy to work around, Minasi said. "On systems with both DOS and Windows NT installed, always designate NTFS as the last drive," he said.

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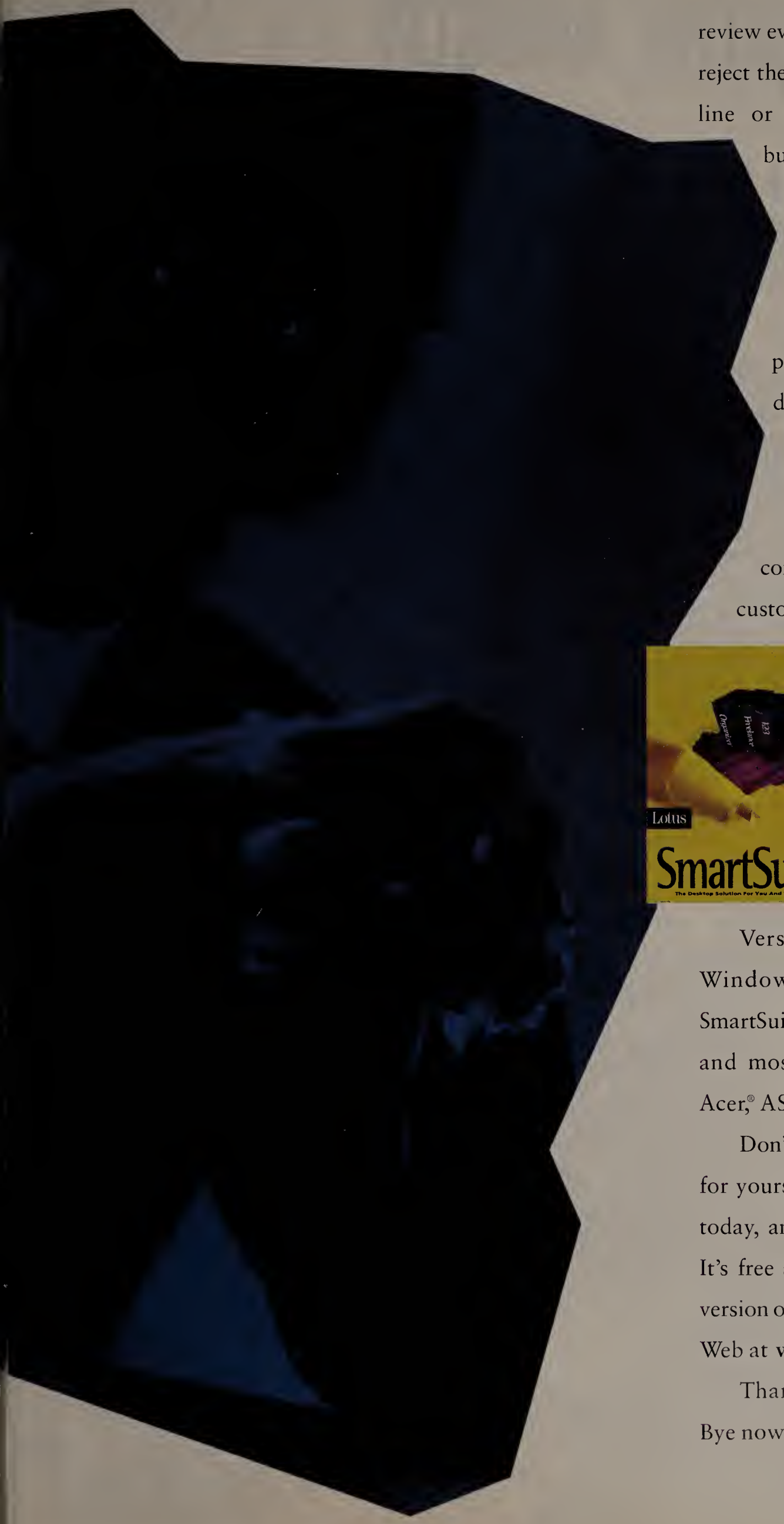

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Computer Industry

Briefs

PicoPower signed

National Semiconductor Corp. has signed a memorandum of understanding with **Cirrus Logic, Inc.** for the purchase of Cirrus Logic's PicoPower assets. National Semiconductor and PicoPower have been collaborating since early 1994 on chips that combine the best features of the two companies.

Electrohome deal

Electrohome Ltd., a manufacturer of high-resolution video/data/graphics projection systems in Kitchener, Ontario, has signed an agreement with **Texas Instruments, Inc.** to produce a line of high-brightness projection systems based on TI's Digital Light Processing subsystem technology.

Gensym moves into the black

Gensym Corp., a supplier of modeling and simulation software, reported most recent quarterly sales of $8.44 million, compared with $5.7 million for the same quarter last year. Quarterly profits were $333,000, compared with losses of $54,000 for the same period a year ago.

ICS hits hard times

Integrated Circuit Systems, Inc. (ICS) posted third-quarter sales of $17.3 million, a decline of 38% from last year's $27.8 million reported for the same quarter. The manufacturer of integrated circuit products reported a net loss for the quarter of $2.1 million, compared with a loss of $5.2 million for the same quarter a year ago.

Interleaf buys Learning Alliance

Interleaf, Inc., a maker of integrated document management software, has purchased **The Learning Alliance, Inc.**, an Avondale, Pa.-based sales force automation software supplier.

USWeb takes franchising route

By Mitch Wagner

USWeb Corp. last week announced the first three conquests in its plan to take over the world of Internet consulting through franchising.

Three small Internet consultancies — NetOffice, Inc. in Atlanta; OpenNet Technologies, Inc. in Clearwater, Fla.; and PageOne Associates in Albuquerque, N.M. — have agreed to sign on as USWeb franchises. The companies probably will change their names to incorporate the USWeb trademark, said Joe Firmage, president and CEO of USWeb in Santa Clara, Calif.

The companies will offer businesses advice and training in how to build and run Internet sites for electronic commerce, marketing and internal corporate communications. USWeb will specialize in midsize 'net sites that cost $25,000 to $100,000 to build, target midsize companies and do relatively small jobs for big companies.

The three franchises are small, ranging in size from PageOne with about 100 employees to NetOffice with about a half-dozen.

US Web

Santa Clara, Calif.

NUMBER OF EMPLOYEES

38

FINANCIAL STATUS

$17M capitalization; privately held

PLANS

To build a nationwide chain of franchised Internet consultants

USWeb's goal is to offer centralized research, training and marketing services to small Internet consultancies nationwide, reaping in return a $50,000 license fee from each franchise and a 7% annual royalty.

By conglomerating existing Internet businesses, USWeb hopes to build a web of Internet expertise nationwide much faster than it could by recruiting and training an organization from scratch. It plans to attract three more affiliates by mid-June and open its doors to new customers July 1. USWeb now has three customers helping to launch the service.

The company was founded in December by three former high-ranking executives at Novell, Inc. They include Firmage, formerly vice president of planning for Novell's NetWare systems group, and Sheldon Laube, formerly vice president of technology at Novell and the Price Waterhouse business consulting firm.

Name they can trust

USWeb's business model could be very attractive to users, said John Samuel, director of distribution planning at American Airlines, which is owned by AMR Corp. in Dallas. With thousands of Internet consultancies springing up nationwide — some run by unqualified staff — users will be looking for a brand name they can trust, and USWeb and its affiliates stand to prosper if USWeb can become that brand name, Samuel said.

"Everyone and their dog is jumping into the Internet these days," Samuel said. "A smaller company — particularly someone who made a decision to be on the Internet but doesn't know what to do — will find a recognizable name helpful."

USWeb's franchise model isn't a first in the computer industry.

Novell grew to success by certifying small reseller companies as Novell specialists and encouraging those companies to use the Novell trademark. USConnect, Inc. in Stamford, Conn., also took advantage of small companies joining together to create a more well-known name. The company formed in 1989 as a partnership of five companies, and it now includes 26 member companies in 53 metropolitan areas in the U.S. and Canada. It specializes in PC LAN connectivity.

Meanwhile, Evernet Systems, Inc. in Los Angeles grew from $3 million in revenue in 1989 to $60 million in 1992 after it acquired about a dozen systems integrators nationwide. Finally, Evernet itself was acquired by Control Data Systems, Inc. in 1993.

AST losses mount; revenue declines

By Bob Francis

The PC market is tough. Just ask AST Research, Inc. in Irvine, Calif.

Two weeks ago, AST announced a first-quarter loss of $115.8 million on sales of $530 million, compared with a $6.5 million loss on sales of $670.2 million for the same period last year.

And according to Ian Diery, AST's president and CEO, it will be late this year or early next year before his turnaround tourniquet slows the red ink.

With competition for both consumer and corporate PC sales intensifying among vendors, AST has been caught in a vice. Market leaders such as IBM and Compaq Computer Corp. cut prices to maintain market share, while smaller, more nimble direct players such as Gateway 2000, Inc. and Dell Computer Corp. danced around AST with new products brought quickly to market. That left AST, which once ranked just behind IBM and Compaq, bleeding red ink.

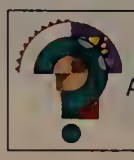
Sacrifice

While other PC companies were profitable last quarter, most sacrificed profit margins to maintain market share.

According to James Poyner, investor analyst at Oppenheimer & Co. in New York, AST may be in for a rough ride. "AST was an outright disaster among the PC vendors reporting results for last quarter," he said. While other companies such as Compaq grew sales at the expense of profits, AST's sales dropped and profitability continued to plummet.

AST's saving grace may be manufacturing plants in Fort Worth, Texas, acquired two years ago when the company purchased Tandy Corp.'s PC business. The company has markedly increased manufacturing efficiency in those plants.

That is a key factor as AST plans to challenge Dell and Gateway in being the first to market with new products. Diery, who came from Apple Computer, Inc., wants the company to offer leading-edge products to its reseller channel before other PC vendors.



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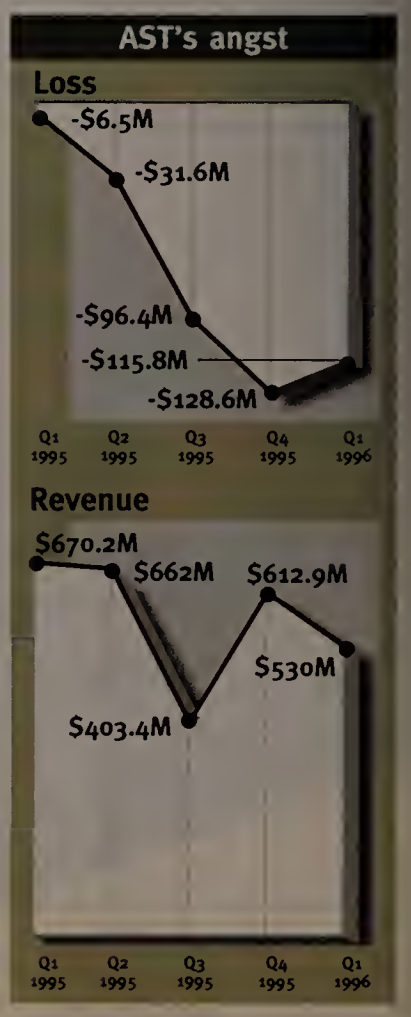

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Each year I am increasingly fascinated by the quality of applications that are being developed for the Windows World Open. It is exciting for me to see technology used in new and innovative ways to create custom Windows solutions for businesses.

This year was no exception; the quantity and quality of applicants have increased and the panel of judges is faced with a difficult job of selecting the best application in each category.

I would personally like to congratulate all of the finalists — you have raised the standard by which future Windows applications will be measured.

Bill Gates

Bill Gates
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Thanks to the Windows World Open, you have the opportunity to see the best in custom applications, to meet the developers who play critical roles in the progress of information technology, and to learn about the tools they use — tools that may be able to help you in your development process.

Gary Beach
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The fifth annual Windows World Open was open to any size company or organization whose custom application: requires Windows 3.1 or higher, Windows for Workgroups, Windows 95 or Windows NT; is created specifically for a company or organization and is not for resale; and was in use by the company or organization by Feb. 29, 1996. (If a company re-entered the same application from a previous year, the application must have a significant upgrade.)

This year there were 151 entries from around the world, including Mexico, Colombia, Venezuela, Brazil, Turkey, Finland and Slovenia. Entrants consisted of companies that had developed an application that increased profits, used a legacy system or helped achieve a higher level of customer satisfaction in one of eight categories:

- Administrative applications, which manage the record-keeping necessary to handle records such as personnel or basic financial accounting
- Core business process applications, which manage a company's mission-critical operations
- Customer service/support applications, which either allow customers to access information or allow employees to access information for better customer service
- Process control applications, which manage the interfacing of a computer with machinery or equipment to perform a core business process
- Work flow and document processing applications, which support document processing, storage or retention
- Applications that manage or support mobile and remote workers
- Performance support applications, which support learning, training or creativity among employees
- Business intelligence applications, which help strategic planning personnel perform ad hoc requests on a custom basis to query information.

Each application was graded by a panel of judges (see p. 18) according to how effectively it solved the business problem; the application's financial and other business benefits; its technical design; the effectiveness of the development process; the GUI; and how well the application leveraged installed technology.

For seven of the eight categories, the finalists consist of the top three entries. In the Core Business Process Systems category, due to the number of entries received, there are six finalists.

Finalists will be displaying their applications at the Windows World Open booth during Windows World 96 in Chicago. Finalists will be honored by top executives from Microsoft and Computerworld, as well as other industry notables. Winners will be announced at the Windows World Open Awards Program, to be held Tuesday, June 4.

The Windows World Open is managed by Janet Church & Associates, Inc., 101 Stewart St., Ste. 300, Seattle, Wash., 98101, (800) 829-4143. Their home page is http://www.wwopen.com. Information on the 1997 contest appears on p. 15.

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COVER ILLUSTRATION BY CHRISTOPHER BING

Stolt Parcel Tankers Inc., Houston, Texas

OnBoard 2.0

Stolt Parcel, which transports specialty liquids on ocean tankers, tracked personnel information and performed its scheduling and payroll functions manually. Handling payroll cost $43 million per year (37% of ship management's expenses), while scheduling inconsistencies kept Stolt from determining the best use of its seastaff.

Now Stolt has a custom application — the OnBoard client/server system — to provide the distribution of data and processing that it had been missing. OnBoard replicates personnel data and shares it to all remote locations. Payroll source data is collected on ships by officers and processed onshore, with results transmitted back for the seafarer to examine. Computer-aided scheduling can predict over- and understaffing for each ship.

The system has reduced staffing levels on ships and in offices, for annual savings of over $2.1 million. Also, by identifying seafarers who do not have proper documents to work on a certain trade route, the system avoids costly delays during port calls.

"By providing access to personnel and payroll information to the seafarer, we have seen morale increase as the once 'secretive' process and data is opened up to them."

THIRD-PARTY: Systems Integration Group, Houston, Texas

Microsoft Visual Basic 3.0

Concentric Data Systems R&R Report Writer 6.0

FarPoint Technologies Spread/VBX

ForeFront ForeHelp 2.0.0

MicroHelp VB Tools 4.0

Popkin Software System Architect CASE Tool 3.1

Sheridan Software: Data Widgets 1.0c, Designer Widgets 1.0b, VB Assist 3.5

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Tambrands Inc., White Plains, New York

Tambrands Fund Management 1.3

Tambrands, the maker of Tampax tampons, needed a system that could deliver trade incentives to execute consumer promotions in stores, and track the effectiveness of these promotions in realtime.

And because trade programs are administered by brokers (which Tambrands uses to supplement its direct sales team) that represent different manufacturers, the solution needed to be as open as possible.

The Fund Management system helps Tambrands get its brokers to represent it more aggressively. The application has re-engineered the flow of information, so that while the frequency of promotions has increased substantially, the administrative costs of executing and tracking those promotions have dropped by over 50%.

"Salespeople are notoriously difficult technology customers. The system had to be fast and easy to use. The design of the GUI came down to one marching order: If a user has a general knowledge of working with Windows, they should not need to be trained."

Microsoft: Access 2.0, Excel 5.0e, Internet Assistant 2.0, Source Safe 3.0, Visual Basic 3.0, Word 6.0e

Crescent Software QuickPak Professional 3.0

Seagate Software Crystal Reports 4.0

Sheridan Software Data Widgets 1.0

Stac Electronics Reach-Out 4.02

Visual Components Visual Developer's Suite 2.0

Vancouver Port Corp., Vancouver, British Columbia, Canada

PortView 1.2

Information on the millions of tons of cargo and hundreds of thousands of cruise ship passengers that go through the Port of Vancouver (PoV) each year must be tracked and analyzed daily.

The information was being collected by three mainframe systems running different applications, but some reports took up to eight weeks to compile. PoV managers needed to track and report on complex business interactions in a more timely manner.

The PortView client/server application gives all PoV departments access to common vessel and cargo data. Vessel and cargo tracking lets PoV officials see where ships are in the harbor, what stops they make, and what cargo or passengers they take on or discharge. Data is entered and reports generated faster with fewer staff, and data can be transferred automatically to PoV accounting and billing systems.

The collection of vessel and cargo information is now 40% more efficient, with information available to a broader base of internal users. Managers can study trends on a near-realtime basis.

"As data volume and user activity grows, PortView will accommodate the increased load without the need for modification."

THIRD-PARTY: Minerva Technology, Vancouver, British Columbia, Canada

Microsoft Access 2.0, Delta 1.0, SQL Server 4.21a, VBSQL VBX 3.0, Visual Basic 3.0, Visual C/C++ 1.5, Windows 3.1, Windows for Workgroups 3.11, Windows NT Server 3.5, Word 6.0

BlueSky Software RoboHelp 2.61

Cognos Impromptu 4.0

Desaware Spyworks VB 2.0

FarPoint Technologies Spread/VBX 2.1

MicroHelp 3-D Gizmos 2.10, VB Tools 3.10

Seagate Software Crystal Reports 4.0

Sheridan Software Data Widgets 1.0

VideoSoft VXVBX 5.0

Transprint USA, Harrisonburg, Virginia

Ink Dispensing System 1.3

Transprint USA is a gravure printer of heat-transfer designs used to create fabrics for apparel and home furnishings. Its manual system of mixing colors could not handle the surge in the average number of colors per run. Also, color matchers and ink makers were having trouble inventorying and storing colors left over from previous jobs. Discarding the leftover colors was not economical, but the warehouse was running out of space.

The solution was to automate Transprint's color-batching area with a recipe-based ink batching system that can accurately deliver inks, colorants, solvents, extenders and dispersions into different types of containers.

With the new system, Transprint's batching area went from creating 172 colors per day to creating more than 500 colors in one 24-hour period — one new ink every 2.8 minutes. The company also reduced its inventory of "use off" (leftover color) significantly, resulting in monthly savings of $15,000 to $30,000 while reclaiming valuable warehouse space.

Bar code guns are attached to all PCs. The system preprints bar code labels; operators put the labels on the containers, then place the container under the dispenser. The system then begins dispensing.

"With the number of jobs we're doing each shift, it's critical that we have the right ink in the right quantity with the right viscosity, at the right press, at the right time."

THIRD-PARTY: Precision Dispensing, West Chester, Pa.

Microsoft Visual Basic 3.0 and 4.0; Windows 3.1

Add Soft Schedule/VBX 1.0

FarPoint Technologies Spread/VBC 2.1

Intersolv PVCS 1.1qa

Blandin Paper Co., Grand Rapids, Minnesota

C.A.C.S. (Clay Area Control System) 4.5

Blandin Paper produces coated papers used in magazines and catalogs. The coatings are produced in the clay prep area. Because there were different control systems in each coating area, maintenance and operations personnel were not as efficient as they could be, and Blandin could not keep pace with customer demand for higher quality.

The company was seeking to reduce costs in all areas of the plant but especially in the prep area, which accounted for $50 million in raw materials annually.

Since deploying the C.A.C.S. application, Blandin has saved $10 per ton in a mill that averages 600 tons per day, for an annual savings of over $2 million. Maintenance call costs have been reduced by $27,456 annually and there has also been an 83% reduction in effluent, resulting in another $688,000 saved per year. And now that all the control systems are similar, Blandin has also reduced training costs.

"There has been a complete cultural shift, with employee empowerment the rule rather than the exception."

Microsoft Visual Basic 4.0

Blue Sky Software RoboHelp

Quarterdeck Software HiJaak Graphics Suite

Rockwell Software Wintelligent Series Software

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Wascana Energy Inc., Estevan, Saskatchewan, Canada

Williston Basin Unit Scada System 1.0

Wascana is an oil and gas production company involved in exploratory drilling projects throughout western Canada. The Williston Basin Unit, in Saskatchewan, has 50 facilities and 700 wells.

Previously, operations personnel had to visit these locations daily for routine checks, maintenance and data gathering. They would gather data on paper and later key it into a field data capture program that calculated daily production numbers. Wascana required an application to capture the useful data electronically, eliminate keying in of data, reduce driving time, help optimize production and reduce the frequency of wellsite visits.

The company installed the Scada system with equipment linked into the application via radio at the facilities and wells. Operations personnel now remotely connect with the master control room each morning. They check facilities and wells via the system, which monitors the facilities and wells 24 hours a day. Operators now plan their day based on what information is provided by the system. The daily well checks are now done every other day; daily checks of water injection wells are now performed monthly.

"Overall gains are expected to be an increase of 6% of total existing production."

THIRD-PARTY: Praxis Instruments, Houston, Texas

Microsoft Access 2.0; Excel 5.0; SQL Server 4.21; Windows for Work Groups 3.11; Windows NT Server 3.5; Word 6.0

Intersolv Data Direct 2.0

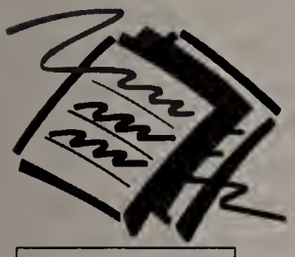
Praxis Instruments custom software

Stylus Visual Voice 2.02

Voice Information Systems VF Edit 1.3

Wonderware Intouch 5.0B; NetDDE 3.1; SQL Access for Intouch 5.0B

Congratulations to the Pioneers in Windows Application Development.



New Crystal Reports Professional 5.0

Crystal Reports is honored to be included as the database reporting tool of choice by five finalists in the Computerworld Windows™ World Open Custom Application Competition.

We believe this honor should also be shared with the users of Crystal Reports. Users like you who have continued to provide us with the input to make our product the best solution for meeting all your critical reporting needs.

In conjunction with the competition and Windows World, we are releasing the latest version of the number one reporting tool: Crystal Reports Professional 5.0.

- Now you can create sub-reports, reports that contain multiple queries and report designs, all in one report. Also included are multiple section reports, form-style reports, conditional reports, multiple summary cross-tab reports, and Microsoft BackOffice® reports.
- You will have increased control over reporting with more than 15 new ActiveX (OLE Control) properties (>90 in total) plus more than 25 new functions (>110 in total).
- And the added flexibility to publish presentation quality reports directly to the Internet and Intranets using new HTML output options. This technology is so hot that Microsoft, Netscape and Oracle are including or supporting Crystal's Web publishing technology in their products.
- Plus you get the power of:
  - Formula control of field attributes such as color.
  - Full date, time, date/time reporting capabilities.
  - In-place editing of text objects.
  - New drawing-style Report Designer.
  - More than 100 Pre-defined Reports.

Visit the Windows World Finalists' booth to view the unique Windows applications developed with the power of Crystal Reports. Then, come check out the new Crystal Reports Professional 5.0 (we're in the Microsoft booth).

In addition, you may qualify for the upgrade price of $199. That's a savings of almost $200 off the full product price of $395. We're so sure Crystal Reports Professional 5.0 is right for you that we offer a full, 60-day money-back guarantee.

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United States Postal Service, Washington, D.C.

Christmas Network Tracking System (CNTS) 1.0

Since 1986, dedicated air transportation costs have risen more than 30% annually, while the volume/unit per aircraft has remained the same. In December, 1995, dedicated flight operations moved more than 2 million pounds of priority mail per day on a 116-plane network. Cost: $100 million.

The USPS needed to track the movement of mail on its dedicated air transport network during the Christmas rush, in order to adjust its routing plans during this peak volume period.

CNTS provided realtime management of the Christmas mail volume and prevented gridlock at key commercial airline hubs. Remote data collection provided realtime information to USPS HQ and to airport hub managers, which they used to isolate problem areas and then coordinate mail and aircraft movements after each blizzard and other bad weather conditions.

Because the CNTS GUI closely follows existing business processes used by air carriers, the application can be deployed with minimal user training.

CNTS has reduced by $20 million the amount of dedicated air transportation purchased by the USPS.

THIRD-PARTY: Edgewater Technology, Wakefield, Mass.

Microsoft Access 2.0; Excel 5.0a; Query 1.0; SQL Server for Windows; Windows NT 3.51; Windows 3.1; Windows for Workgroups 3.11; ODBC Drivers (SQL Server and Access 2.0); Win32SDK; Visual C++ (1.5, 2.0)

Oracle for Windows NT

Q+E ODBC Drivers (Oracle Gupta)

Symantec pcANYWHERE

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Water Management Section, Seattle District, US Army Corps of Engineers, Seattle, Washington

Water Control Database System (WCDS) 1.2

The US Army Corps of Engineers' Water Management (WM) section collects hydrologic, climatologic and water quality data from 200 sites and regulates six federal dams built to control floods and generate power.

Communication is critical to dam regulation and flood-fighting operations, which need high levels of coordination of federal and private agencies. The collection, manipulation and display of realtime data over radio, telephone and satellite networks was overwhelming. Engineers were creating spreadsheets that imported realtime data from multiple databases and relaying information to management, other Corps offices, the media, business owners and the general public.

The Water Control Database System reduced the labor involved in collecting, manipulating and displaying data by nearly 90%. This in turn significantly reduced the manpower required to monitor dams and allowed timely decisions based on hydrologic and water quality data. Information could now be presented graphically to engineers and managers alike.

"A scaled down version of WCDS was put on the Internet to let other agencies and the public view WM's realtime data. During a recent flood, the site received over 10,000 hits."

Microsoft Access 2.0; Excel 4.0; Powerpoint 4.0; Visual Basic 3.0; Word 6.0

Hydrologic Engineering Center, USACE: DSSUTL 6.8, DSPLAY 2.0, DSSMath 2.0

Leonardo Haddad Loureiro Lview 1.4

Cervecería Polar, Caracas, Venezuela

Iceberg 1.0

Cervecería Polar is one of the largest food processing companies in Latin America. Its many products include beer, malt, flour, corn oil, rice paste, soda and ice cream.

The problem stemmed from the corporation's diversification: Each of its four manufacturing plants, eight distributor agencies and 92 sales agencies had different procedures for commercial transactions, inventory control and accounting. All of this differentiation made the consolidation of all the information at the corporate level a logistical nightmare.

In addition, only 20% of the company operations were automated, and the computer hardware that did exist was obsolete hardware. The information provided by this outdated system was limited, sometimes inaccurate and usually not timely, resulting in a poor environment for decision making by management.

By deploying the PC network-based Iceberg system, Cervecería standardized the operational procedures of all 92 sales agencies. The user-friendly interface, combined with the fact that the applications have been downsized, means that more people can use Iceberg compared to the old systems.

With almost every agency process automated, the flow of information is now accurate and on time, and managers can attain the benefits of effective decision support.

Microsoft Access 2.0; Visual Basic 3.0

Apex Software True Grip Pro 1.1

Blue Sky Software RoboHelp 3.0

Crescent Software Quick Pack Pro 3.22

FarPoint Technologies Tab Pro 1.1

Seagate Software Crystal Reports 4.0

Visual Tools First Impression 1.1

Distribution Fulfillment Services Inc., Columbus, Ohio

Distribution Control System

Distribution Fulfillment Services was formed as a division of Spiegel Inc. in 1993 to handle catalog fulfillment and retail distribution for Spiegel and Eddie Bauer. DFS needed to increase the operational throughput of its distribution center and reduce costs associated with the handling and shipping of goods.

Challenges included multiple host databases and hardware platforms, the size of the facility (4 million square feet), the length of the conveyor system (24 miles) and the number of peak orders processed per day (over 225,000). With a facility of that size and scope, DFS needed immediate access to information in order to make time-critical management decisions.

With Distribution Control System (DCS), the company can connect with multiple platforms and host databases to verify inbound goods and shipments. Because data is uploaded throughout the day, DFS can advise customers of their order status in realtime. DCS helps ensure error-free processing and shipping of orders by incorporating a Conveyor Control application integrated with weigh scales. DCS is capable of multiple tasks, including producing manifests by selected shipper on demand without interruption to scanning, weighing and collection of data.

"Our operating costs were reduced by 20% while our ability to serve our customers increased."

"Our ability to distribute more product with fewer people has allowed us to maintain operating costs while increasing our market share."

THIRD-PARTY: ScanData Systems, Dublin, Ohio

Microsoft BackOffice (SQL 6.0; NT 3.51); Source Safe 4.0; Visual C++ 2.0

Seagate Software Crystal Reports 4.0

Johns Hopkins Hospital, Baltimore, Maryland

Host Interface Program (HIP)

The Johns Hopkins community required a consolidated interface into its many information systems. The interface had to be simple to understand, configurable and able to support the exchange of information between incompatible information systems as well as the future migration of legacy applications to client/sever.

The Host Interface Program (HIP) GUI accesses over 30 different information systems residing on 12 separate hosts. Through HIP, anyone given security access — from an entry-level clerk to a surgeon in an operating room — can access critical information. HIP users do not need to know how to navigate through Hopkins' extensive information infrastructure. From its consolidated interface, HIP supports terminal-, GUI- and client/server-based information systems.

Through the deployment of HIP, Johns Hopkins will, over the next two years, save more than $4 million in training and the elimination of support costs for a variety of access tools, software and hardware.

THIRD-PARTY: Europa Systems Group Inc., Silver Spring, Md.

Microsoft SQL Server 6.0; SMS 1.1; Visual C++; Visual Test 4.0

Intersolv PVCS 5.2.07

NuMega Bounds Checker 3.0

UnderWare Track Record 2.0

Vermont Views High Test 2.0

Wall Data Rumba Office 2.0

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Merrill Lynch, Princeton, New Jersey

Merrill Lynch TGA Shell 1.0

In its transition from a transaction-based model to one based on financial planning, Merrill Lynch needed to acknowledge greater client access to information formerly available from financial institutions. Merrill needed to empower its brokers with basic real-time information and decision support expertise to support its client base.

Moving to a client/server model with more than 500 domestic locations housing 22,0000 users presented vast application redesign challenges. One integrated environment had to manage more than 50 different business area requirements, including market data, office automation and client information needs.

The TGA shell provides a seamless environment to house and execute many applications, while giving consultants a similar look and feel for all their tasks. The shell accommodates both off-the-shelf and custom applications with no coding changes.

The TGA workstation lets the brokers support more clients and manage more assets, while reducing the time to develop, monitor and implement comprehensive financial plans.

To support 22,000 users, most of them new to Windows, the GUI was critical. First-time users easily grasp its book metaphor, with information organized in chapters and sections. By encapsulating all applications in the shell, TGA attained a level of UI abstraction that makes all information uniformly accessible.

Microsoft Windows NT; Visual C++ 4.0; Foundation Class Libraries 4.0; Visual Basic 3.0

Microsoft
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Will the Internet bring an end to business computing as we know it?

Not at all. It will simply knock down the walls between people, between departments — even between companies. The promise of the Internet, while intoxicating to some, is threatening to others. Because along with the unlimited access and opportunity it provides, comes the need for new strategies and new technologies. Happily, those who've begun the transition to client-server already have much of what they need in place. And to help businesses incorporate the Internet and intranet into their operations, Microsoft is integrating the necessary technology into many of its products — from desktop to server to tools.

For example, it's never been easier to connect desktops to the Internet. That's because both Microsoft® Windows® 95 and Windows NT® Workstation operating systems have all the "plumbing" built right in. Viewing content is just as effortless. With Microsoft Internet Explorer, users can browse the Internet (or internal corporate webs) whether they're working on the Windows platform or on the Macintosh.™

Of course, making web content easy to view is only the beginning. To be useful to organizations, content has to be easy to create, too. Which is why the latest generation of Microsoft Office applications, along with Internet Assistants, allow users to develop web content without programming. They simply save their work as HTML, the way they would any other document. Such ease-of-use also extends to the newest member of the Microsoft Office family, the Microsoft FrontPage™ web authoring tool, which lets users create and manage entire web sites, even if they've never so much as programmed a VCR.

The Internet is very much a part of our BackOffice™ family, too. With Microsoft Internet Information Server, we've extended the performance of Windows NT Server to make the ideal Internet platform. Now every organization can host and manage web content and applications securely and reliably. And, with Microsoft Exchange Server, secure and reliable e-mail is also a reality, whether it's traveling over the Internet or within your organization.

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General Electric Power Systems, Schenectady, New York

Equipment Configuration Management 1.00

GEPS power generation products, which include steam, gas and hydro turbines, generators and nuclear power systems, are installed worldwide. Information about the 21,000 units at 4,800 customer sites was hard to obtain and often inaccurate. Without accurate and timely collection, classification and retrieval of such information, GEPS was losing sales and service opportunities, while suffering increased costs and lost time.

The Equipment Configuration Management (ECM) system now manages the collection, classification and retrieval of information. Data is stored in a consistent format on a SQL Server and can be distributed from a central location. The GUI provides global access to this information to users on the network as well as those offline.

ECM replaced two mainframe applications that cost $140,000 per year. More savings come from eliminating redundant efforts to maintain multiple configuration databases.

THIRD-PARTY: Information PowerTools Inc., Albany, N.Y.

Microsoft Access 2.0; Mail 3.11; Remote Access Services 3.11; Visual Basic 3.0

AccuSoft Image Format Lib 5.00

Datura Desktop DBA 2.1

ForeFront ForeHelp 2.0

GC Consulting Services ToolTip 1.4.1

Logic Works ERwin/ERX 1.2

MicroHelp Compression Plus 3.0

Sheridan Software Data Widgets 1.0

Sybase SQL Server 4.9.2

VideoSoft Custom Control VSVBX 4.0

Chase Manhattan Bank, N.A., Brooklyn, New York

InfoStation 2000 2.0

Chase Manhattan's Global Investor Services (GIS) business helps institutional investors maximize returns and mitigate risks associated with global investments.

GIS needed an intuitive desktop environment to give clients one point of access to U.S. and non-U.S. custody and accounting data generated by mainframe systems in different locations. To produce reports, the old environment required dial-in to multiple systems and time-consuming downloads. Clients wanted more sophisticated tools for viewing, analyzing, reporting on and reconciling data.

InfoStation 2000's GUI lets any client, regardless of skill level, quickly evaluate data to make investment decisions. Users log in to a SQL server and use tools such as wizards to customize data views and retrieve only the data they want. This data can be analyzed, graphed, reformatted in reports, saved or exported for use in other Windows applications.

Eliminating burdensome downloads through Sybase replication servers reduced manual intervention often required by the support staff. Putting the tools for customization in the clients' hands reduced the amount of work Chase had to provide.

InfoStation's design reflects the way people work. With compressed financial settlement timeframes and increasingly volatile markets, financial decision makers spend their days multitasking — analyzing, comparing, reconciling and reporting.

"The ability to switch between design and run mode for the major tools means that a user can continually adjust to real-world conditions."

Microsoft Access 2.0, Visual Basic 3.0, Visual C++ 2.0, Windows 3.1

Blue Sky Software RoboHelp 3.1

NetManage Chameleon 4.0

Shiva Corp. Shiva Remote 3.5

Sybase Replication Agent 1.1; Replication Server 10.1; SQL Server 10.02

Stirling Technologies DemoShield 4.0; InstallShield 2.0

WexTech Systems Doc-to-Help 1.6

Blandin Paper Co., Grand Rapids, Minnesota

M.O.S.S. (Maintenance/Operations Support System)

Blandin produces coated papers for magazines and catalogs. When competitive pressures forced the shutdown of two paper machines and the layoff of 500 people, the company had to re-evaluate the way it did business.

Blandin needed a better way for its operations and maintenance personnel to diagnose and fix increasingly complex paper-making equipment. The few knowledgeable individuals were not always available, and downtime costs were significant. The company needed a support system to capture this knowledge, so practically anyone could troubleshoot and repair the systems.

With the M.O.S.S. system, maintenance call costs have been cut by $27,456 annually, and the time needed to troubleshoot systems has been reduced from days to hours.

Microsoft Visual Basic 4.0

Allen-Bradley 6200 Software 5.01

Blue Sky Software RoboHelp

Quarterdeck Software HiJaak Graphics Suite

Rockwell Software Wintelligent Series Software

Gallant Insurance Co., Park Ridge, Illinois

ACT 3.0

Gallant Insurance, a $110 million auto insurance company doing business in Illinois and Indiana, enjoyed a 30% annual growth in premiums from 1992 to 1995. But this caused its staff to double, putting heavy workloads on its systems infrastructure.

As a result, Gallant had serious problems maintaining quality in servicing its claims. Mail was frequently delayed or lost in routing and files were misplaced, all leading to poor customer service.

The firm needed a workflow-based processing system that would not only provide structure through system controlled rules and procedures, but also eliminate or reduce the use of paper.

The ACT claims processing system combines data elements, workflow rules and logic and image processing/handling into one client/server environment. Claims adjusters can now take a call or work a claim from any location without having to refer to a paper file. The system also provides individual work queues of different types of work items for each user, allowing Gallant to manage adjuster productivity on a daily basis.

Claim checks are electronically approved and printed with digitized signatures, eliminating the manual signing of 400 to 500 checks a day.

Gallant used Visual Basic in the front end, SQL Server as the database server and an HP9000 running Filenet software as an imaging server.

"The expected bottom line impact is about $500 million, through improved subrogation and salvage, tracking and recovery."

THIRD-PARTY: Application Partners, Inc., San Ramon, Calif.

Visual Basic 3.0; SQL Server

Kirksey And Partners Architects, Houston, Texas

KPA Brochure Wizard

Kirksey And Partners Architects is organized in teams, each focusing on one project type, such as master planning, retail, educational, health care or financial. The teams require a wide array of up-to-date materials, which must be available for selection and assembly by many people.

Assembling a brochure by word processing had several drawbacks: It required extensive program knowledge by users; took too much time to produce (30 minutes for a 40-page brochure); and managing content and version control was nearly impossible.

With KPA Brochure Wizard, users at any computer can select from 500 topics (one paragraph to three pages long). A dialog organizes the complex selection and ensures that all decisions are made. Selections are automatically transmitted to the marketing coordinator for assembly and printing. The file contains all required information, such as binding, deadlines and delivery.

Now each brochure is exactly on target and typically takes five minutes to assemble. The new application saves about $35 in expenses over the previous system. The Wizard dialog tracks the cost of selections to match the brochure expense to the prospect.

The objective — of both the company's infrastructure and the new system — is *"to move control as far down through the organization as possible."*

Microsoft Word for Windows 6.0; Windows 3.1; Windows 95;

Artisoft LANtastic 6.0

Quarterdeck Software HiJaak Graphics Suite 3.0

Symantec Act! for Windows 2.06

WexTech Systems Doc-To-Help 1.6.1

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Ontario Hydro, Toronto, Ontario, Canada

CARUSR (Computer-Assisted Review & Utilization of Safety Reports 2.4)

Ontario Hydro generates and distributes electricity to Ontario and adjacent provinces. Sources of electricity are coal, hydro-electric and nuclear, with the latter generating 60%.

Safety reports submitted to federal regulators are critical to the operation and licensing of the 19 nuclear reactors. The utility needed timely and auditable preparation, review and distribution of multi-author, multi-reviewer and multi-site reports. Delay in submitting a report can cost millions of dollars. An error or omission in a poorly reviewed submission can pose a serious risk to the public and workers.

The custom application's finer paragraph-based comments and searches helped focus on specific concerns much faster and earlier. Concurrent preparation and review eliminated lag time between phases. Reviews that took 10 weeks now take two to three days.

CARUSR has saved millions of dollars by improving technical quality, allowing earlier submissions, and reducing costs of developing and distributing documents.

THIRD-PARTY: Idea Research, Toronto, Canada

Microsoft Visual Basic; C; Visual C/CPP; Help Compiler 3.1; Word for Windows 2.0c; Excel 4.0a; Excel SDK;

Inner Media DynaZIP 2.0

MicroHelp VBXRef 2.10

Micrografx ABC Flowcharter 2.0

Zenographics Zscript 1.02

HO Sports Inc., Redmond, Washington

HO ROAM (Remote Order & Account Management) 96.01.29a

HO Sports, a maker of boat-pulled watersports equipment such as waterskis and kneeboards, more than doubled annual sales in the past five years but kept the same size sales force.

The company needed to improve the communication and information availability of its sales reps throughout the organization. The reps, who need up-to-date information on their dealers' accounts, were relying on faxes and phone conversations with the factory. HO's customer service personnel spent 20% of their time fielding questions and rekeying faxed orders.

The HO ROAM system has given the sales reps first-hand access to all details of their dealers' accounts. They are instantly aware of backorders and late shipments and can act on potential problems before the dealer becomes involved. When a sales rep visits a dealer, they can answer most questions without involving customer service.

This reduced reps' reliance on customer service by 30%, which freed customer service up to handle the company's expected 50% growth.

"When a sales rep knows what is moving through a dealer and can instantly access sales history and to do their own analysis, they're more in tune to that dealer's needs and concerns."

Microsoft Exchange Client 4.0.410.59; Word for Windows 7; Visual FoxPro 3.0

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Lawson Products Inc., Des Plaines, Illinois

Lawson Catalog Generator 1.0

Lawson Products depends on a mobile sales force to sell its maintenance, repair and replacement products.

Each salesperson had to tote a 36-lb. paper catalog to each site. The company wanted an electronic alternative, to ensure that its salespeople had up-to-date product information at all times and to reduce the time between order placement and receipt by the manufacturer by automating the order process.

The Electronic Catalog Designer converts the 36-lb. paper catalog into a 1-oz. CD that includes product pictures and text, technical information, multimedia elements and ordering functions. Changes and additions can be made through the simple user interface. The automated ordering process allows a salesperson to place orders from the catalog to the manufacturing site either by E-mail, modem or via the Internet.

Benefits: salesperson time is saved, ordering time reduced, accuracy increased, and printing and paper costs eliminated. Lawson estimates savings of $800,000 this year and $300,000 per year hereafter in printing and personnel costs alone. The company also has increased market penetration to the tune of $1,682,000 in sales per year.

Typical users of the electronic catalog are salespeople with limited computer experience. The intuitive GUI lets them navigate quickly through thousands of products. A catalog metaphor lets sales agents use tabs to "page" to the appropriate section or they can go directly to a product using the search function.

THIRD-PARTY: RR Systems Inc., Brookfield, Wis.

Microsoft Access; DDBC 2.0, Visual C++ Developer Studio 4.0, Windows 95

WexTech Doc-To-Help 1.6

Red Lobster Guest Relations, Orlando, Florida

ReachOut Version 4.4

Red Lobster has over 700 restaurants in North America, making it the largest casual dining seafood restaurant company. Guest communications are critical in the rapidly growing casual dining segment. The problem was getting timely and accurate guest satisfaction feedback from traditional sources of feedback: comment cards, letters and management feedback. The previous Q&A-based system was collapsing under an increasing workload.

Three-fourths of Red Lobster's Guest Relations staff is physically challenged. The ReachOut application includes an 800 number that provides access to these representatives in the office and at their homes. The software allows equal access for physically challenged representatives who work from their homes and enables them to access the same databases as those who work in the office.

Guest Relations contacts have grown from zero to over 5000 per month in the last three years.

The most critical design requirement of the UI was that the system be easy to use and flexible enough to allow the representative to maintain a friendly conversation with the guest while capturing vital information and responding to that guest's inquiries in realtime.

THIRD-PARTY: Strategic Information Associates, Northbrook, Ill.

Microsoft Mail for Windows 3.2, Word 6.0e

Informix Software Informix On-Line 5.02

Logic Works ERwin-ERX for PowerBuilder 2.1

Powersoft PowerBuilder Enterprise 4.0.03

Stac Electronics ReachOut 4.4

Sybase SQL Anywhere 4.0

University of Wisconsin Windows 3.1 Access Utility

WexTech Systems Doc-To-Help 3.10

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PanCanadian Petroleum Ltd., Calgary, Alberta, Canada

Operator's Toolbox 2.1

PanCanadian Petroleum, Canada's largest wholly owned oil and gas producer, must get the most oil out of the ground for the least money.

To accomplish this, it must keep an eye on data pertaining to production and well repair. Complex mathematical analysis is run on this information to decide what can be done to increase production or decrease cost. Production data is stored in a different database than well repair, and the field operations staff who watch that data cannot perform the analysis required to uncover opportunities.

Operator's Toolbox integrates data from the legacy databases, isolates the data required for analysis, feeds that data to the appropriate functions and returns suggestions, result sets and graphs to users that indicate whether to increase production or decrease pumping costs. What took days of probing, sifting and preparations by people who were not close to the data and wells now takes seconds.

PanCanadian reduced the man-hours required to find production and achieved efficiency enhancement opportunities of about 9,000 hours per year. Also, well repair money is now spent on wells that show real potential.

The new system lets users graphically track production trends and reduce complex calculations, while unifying data from many legacy systems.

Some oil and gas companies are investing millions of dollars in pursuing this goal. But by using one programmer, one engineer and one user, PanCanadian resolved this issue in six months for less than $60,000.

Microsoft Access 2.0; SQL/W 6.0; Visual Basic 3.0
Apex True Grid 1.5
VideoSoft VSView 1.0

National Association of Securities Dealers (NASD) - Regulatory Systems, Rockville, Maryland

Automated Examination Modules (AEM) 1

In addition to operating the NASDAQ market, the NASD is a Self-Regulatory Organization (SRO) in the securities industry. The Regulation Division assesses how well its 5,500 member firms comply with industry regulations and ethical business practices through examinations.

The Automated Examination Modules (AEM) performance support system helps NASD examiners conduct and prepare these examinations. AEM:

- Ensures that exams are based on current regulations and standards.
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- Trains novice and intermediate-level examiners in the exam process.

In reducing exam preparation time by 20% and reducing the time required to conduct exams, AEM has saved the NASD some $2 million annually in manpower. In addition, converting to a digital system substantially reduced paper and distribution costs.

THIRD-PARTY: DLS Group, Inc., Denver, Colo.
Microsoft Access 2.5; Visual Basic 3.0; Word for Windows 6.0
Adobe Systems Photoshop 3.0
Avanti Software PinPoint 1.0
Blue Sky Software RoboHelp 3.0
Crescent Software Crescent Controls 3.0
Desaware Spyworks-VB 2.0; Version Stamper 1.0
FarPoint Technologies Spread VBX 2.0 and Tab/VBX 1.1
Sheridan Software VB Assist 3.0
Solutionsoft Help Breeze 1.6
StarBase Corp. Versions/VB 1.1c
Visual Tools Formal 1 2.0; VisualWriter Pro 2.10
VideoSoft VSView 1.0

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Bank of Boston, Boston, Massachusetts

RAROC (Risk Adjusted Return on Capital)

During the real estate crisis of the early 1990s, banks were under pressure to understand the risk adjusted contribution of their customer relationships and each of its businesses. Bank of Boston needed a tool to help its relationship managers prospectively structure and price deals that are healthy for customers, and to help management measure the performance of individual relationships and businesses.

Through its pricing model, the RAROC application allows relationship managers to structure each deal for maximum value. Through the software's performance model, management can tune its balance sheet and utilize its capital for greatest return.

RAROC was designed to show a consolidated picture of a customer relationship, all revenue and all expense components.

The users of RAROC are professionals, many of whom were not comfortable with computers. With RAROC (and other client/server offerings), the way corporate bankers perform work has changed dramatically. Now they are fully dependent on their automated tool sets.

Microsoft SQL Server 4.2
Banyan VINES 5.0
Borland C++ 3.0
Powersoft PowerBuilder 3.0
WexTech Systems Doc-to-Help 1.6

Strang Cancer Prevention Center, New York, New York

Cancer Genetics Outreach System 2.0

Strang needed to: 1) provide cancer genetic screening services for a managed care network serving the NY metropolitan area; 2) provide primary medical intervention and screening services to a registry of 15,000 women at increased risk of breast cancer; 3) research the genetic basis of the disease by analyzing the DNA of large numbers of families and performing long-term follow-up; and 4) find a method for remote preliminary screening of the general population for those at increased risk of breast cancer.

Strang scaled its Fxx Engine and Database application to include anyone with a family history of any cancer. The result is a very large database of people at risk, which is critical to research.

Strang converted the application it submitted in 1995's Open to 32-bit and enhanced the system to include: a redesigned remote kiosk interface for touchscreen data entry; a faster NT server with more disk space; and an integrated CD-R for optical storage.

By using a Web page for preliminary genetics screening, the application eliminates the need to develop cross-platform client-side applications. Strang's financial office estimates the savings from this, as well as from reduced training and institutional integration at $225,000.

Microsoft Exchenge Server; Meil Server 2.0; Windows NT Server 3.51; Windows NT Workstation 3.51; SQL Server 6.0; Visuel Besic 4.0; Visuel C/C++ 2.0; Internet Informetion Server (Beta)

Accusoft Imeging Library 2.0

Logic Works Erwin 2.5

Netscape 2.0

Sunshine Softwere Help Yourself 2.5

COMPUTERWORLD'S 1996 CUSTOM APPLICATION CONTEST

Seattle City Light, Seattle, Washington

BIRD (Billing Information Research Database) 2.0

The Commercial/Industrial Energy Management Services Division of Seattle City Light (SCL), an electric utility, uses historical consumption data to assess past energy efficiency projects and identify new opportunities.

SCL needed timely retrieval of up to five years of billing history for customers with multiple meters and/or accounts to process incentive payments, improve savings estimates and rate project performance. But its mainframe-based Customer Information System provided only 18 months of history on a meter-by-meter basis and its interface was not user-friendly.

The BIRD application contains histories for all accounts from 1990 to present. The system cleaned up many data problems and eliminated the need for analysts to log on to the mainframe. The output file is processed by an Excel workbook that can incorporate data about other fuels, water use and weather to provide a full picture of a customer's utility use and cost. And the self-explanatory GUI allows any analyst to operate the system.

BIRD will help meet a goal of $1.5 million in commercial/industrial savings and facilitate new service offerings such as energy efficiency audits.

Third-parties: Matthews Research, Shoreline, Wash.; SBW Consulting, Bellevue, Wash.

Microsoft Access 2.0, C++ 1.5, Excel 5.0

Attachmete Extra!

SAS Institute SAS

Los Angeles Police Dept., Los Angeles, California

Hitman, Version 3

To computerize the tracking of murder suspects and cases, the Hitman Detail of LAPD's Robbery-Homicide Division needed to collect, store and analyze the thousands of murders committed every year in L.A.

Intermixed in this vast amount of data were clues left by killers that could be detected with the right software — if the right software were available. LAPD also needed a way to quickly sift through all these cases to find those matching recently discovered bodies and statements from suspects in custody.

Because many murderers either live in L.A. or pass through it, many clues lead back to "the city of Angels," and detectives and other law enforcement agents from across the U.S. call the Hitman Detail in search of clues. Until Hitman, there was no centralized location to obtain data on homicides.

The program stores data on large numbers of homicides and gives detectives quick access to suspects, details about the victims and other clues. Once the database is on the Internet, detectives nationwide will be able to query murder data, helping catch serial killers traveling across the U.S.

Other benefits will include eliminating the needs for huge management bureaucracies and expensive WAN and LAN cabling.

"Hitman was rewritten from scratch, abandoning old ideas such as design by committee, MO codes, mainframe platforms, rigid management control, obsolete city software standards, endless screen flipping, etc. The result is a program that is highly creative, innovative and flexible in design."

Microsoft Access 2.0, Foundetion Classes, Visuel C++ 1.52

The 1996 Judging Panel includes:

Richard G. Arns
Executive Director, Chicago Research & Planning Group

Charles Babcock
Technical Editor, Computerworld

Larry A. Bobbitt
Associate Partner, Andersen Consulting

Tim Byers
Staff Computer Systems Engineer, Shell Western E & P

Alan Cooper
The Author and Father of Visual Basic

Gus Evans
President, G. Warfield Evans Associates

J.D. Evans
Principal, ETN Corp.

Hector E. Garcia
Senior Software Engineer & Project Manager, Confia S.A., Abaco GrupoFinanciero

David Gusman
MIS Director, Thompson, Hine and Flory

Ray Hamman
Chief Technologist, EDS Client Server Integration

Rich Hebda
Vice President, First Chicago

Jim Lisiak
PC Specialist, Chevron Information Technology Co.

Patrick Marshall
Technology Columnist, InfoWorld, Seattle Times

Robin Rokisky
President, Seaton Delta Consulting

Nicole Roth
Senior Analyst, International Data Corp.

Brent Williams
Research Director, Gartner Group

Veronica Williams
Principal, ACT Inc.

Microsoft, Computerworld and Softbank COMDEX would like to salute all the entrants that submitted custom applications to the 1996 Windows World Open:

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Distribution Fulfillment Services, Inc.
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Fantasy Diamond Corp.
FirstLine Trust Company
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GeoCore Services, Inc.
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Southam, Inc.
Stolt Parcel Tankers Inc.
Strang Cancer Prevention Center
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Tokio Marine Management Inc.
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This exclusive, world-class conference on intranets — internal Webs and the enterprise — is an interactive forum in which CIOs and industry leaders will discuss and formulate their agendas for the corporate growth of intranets. Presented by *Computerworld*, the leading weekly newspaper for information systems management, and sponsored by Compaq, Informix, Netscape and Sun Microsystems, this conference will set the agenda for the growth of corporate intranets in the '90s.

CIOs interested in attending Computerworld's intr@net '96 should call **(800) 340-2366** to be pre-qualified. Participation in this June event is strictly limited. We expect a sold-out conference. So call today!

CIOs and industry leaders slated to attend Computerworld's intr@net '96, as of 5/1/96.

Gordie Petterson, 3M
Spenser Malkelmurry, Avon Products
Richard Headly, Banc One Corporation
Al Battaglia, Becton Dickinson & Co.
Maryann Goebel, Bell Atlantic Nynex Mobile
Susan Unger, Chrysler Corporation
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Ronald Ward, Compaq
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Editorial

Surfing

I don't usually devote this column to a new product, but there's one on my desktop I think is important enough to challenge our assumptions about Internet information delivery.

It's PointCast, an Internet-enabled screen saver that draws a continuous stream of news, weather, sports, business and lifestyle information from a server on the 'net. This free client software from PointCast, Inc. in Cupertino, Calif., (http://www.pointcast.com) is the most useful application of agent technology I've seen, and it may spark a fundamental change in the way we think about Internet interfaces.

PointCast lives on your Windows PC and quietly downloads categories of news that you specify over a background Internet connection. You can read the information online or let PointCast's screen saver utility pop up and display the headlines, stock quotes and, yes, advertisements on your screen. If you have a continuous Internet connection, your data is never more than about an hour old.

What impresses me about PointCast isn't so much the technology — although that's pretty slick — but the way it challenges the Web browser metaphor. Frequent surfers know that one of the most maddening things about the World Wide Web is that it's a passive medium: You have to go looking for stuff. That's a waste of time for the user and a problem for businesses that spend time and money drawing users to their sites.

PointCast brings you the information you want without your having to ask. The screen saver is a small stroke of genius because it makes the application an active presence on your desktop. PointCast will keep the service free by selling on-screen ads. Company officials say it's already the second-most-visited Web site.

Now PointCast is extending the technology to the intranet through a $995 package that gives an internal web the same capabilities as the PointCast server. So, instead of Cubs scores scrolling across your screen, you can see the names of new hires in your business unit. It's a smart way to use all those MIPS that are being burned running "Dilbert" screen savers.

I expect the PointCast idea to be adopted in a lot of other products. As an information provider, I'm a little spooked by the competition. But as an avid 'net surfer, I'm intrigued by the creativity of the concept. I wish I'd thought of it.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*
http://www.ultranet.com/~pgillin

Letters to the editor

Remember OS/2

I was amused and annoyed to see Bob Francis' article "Desktops hit disk barrier" [CW, April 15]. Oh, my. None of the major operating systems — "MS-DOS, Windows 3.1 and Windows 95" — can handle drives more than 2G bytes, so you'll have to switch to NT. Especially amusing is that on the jump page the box in the upper right corner is "Nightmare on NT street." Ever heard of OS/2?

High-performance file system supports drives up to 512G bytes, yet there is nary a mention of it in Francis' article. Of course, at 12 million users (as of last December), OS/2 isn't a major operating system. Perhaps the name of your publication should be *RedmondWorld*, so that your masthead reflects the same orientation as your staff.

Mark Loveless
System Designs, Inc.
Little Rock, Ark.
mslsdi@ibm.net

Some great advice for losing one's job

Richard Finkelstein's Viewpoint column ["Separating the cybergems from the cyberjunk," CW, April 29] is a great recipe for getting to know a headhunter. It's good enough advice for the 80% of the applications that are used less than 20% of the time, but it's disastrous advice for your bread-and-butter applications. The "high deployment, maintenance and upgrade costs ... of today's client/server applications" don't even approach the user's cost of lost productivity due to a browser-based application's poor response time for any remotely mission-critical application.

Finkelstein clearly doesn't understand the nature of the hardware business if he thinks he can avoid renovating thousands of pieces of desktop hardware every two years. Manufacturers will ensure that this year's model has some whizbang feature not in last year's. Any IS manager who tells users their obsolete models are still "good enough" will soon be looking for a job.

Gordon McMillan
Concord, Calif.
gmcm@ccnet.com

Microsoft will win

In a technological sense, civilization advances as people learn to use new inventions ["Will Microsoft catch Netscape?" CW, April 29]. Over time, complexity is learned or hidden, and new ideas become common knowledge. This same force will tame the Internet, and network access will be simplified. I predict dominance by Microsoft. It is a marketing master of the commonplace.

Jerry Norton
Bradenton, Fla.
102132.3244@compuserve.com

An 'open' question on Windows NT

In "DEC's Win NT gang grabs for Unix turf" [CW, May 6], Jaikumar Vijayan quotes [D. H. Brown and Associates analyst] Tony Iams as claiming that Windows NT is more open than Unix environments. Does Iams really expect us to believe that an operating system that lives in the public domain is less open than one owned and controlled by a single company? The next time you get quotes from an expert, make sure he knows something about what he's talking about.

Kirk Pepperdine
Miami
kirk_pepperdine@email.fpl.com

Tech doesn't filter down from tyrants

I care about social issues. I'd rather not read about them in *Computerworld* though, thank you, especially the specious social drivel espoused by Joe Maglitta ["Dying to make technology work for all," CW, May 6].

People do help one another. Technology does filter down, except in places such as Cuba. Making the world a better place is one thing — and what most of us are trying to do at our jobs. Making the world safe for repressive government edicts and tyrants is another. I wonder if Maglitta knows the difference.

Michael Mayo
Los Angeles
70473.3024@compuserve.com

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Allan E. Alter

Business alignment's dirty little secret

Seven reasons why my car mechanic thinks IS/ business alignment is a mirage.

I was dozing off at some conference for IS big shots when I sat up with a jolt. Sitting right next to me, taking notes with a greasy pen, was my car mechanic.

"Jimmy! I thought you were working on my car!"

He smiled slyly. "I was, until I read that copy of *Computerworld* you left in the backseat. It says a CSC Consulting survey found that aligning IS with the business is once again the No. 1 issue in IS. So I came here."

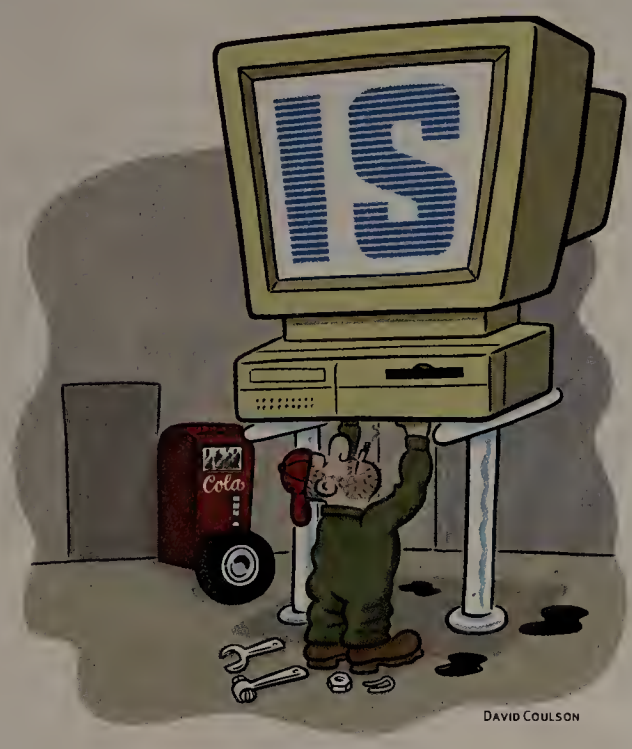
"But you were supposed to do an alignment job on my Rambler!"

Jimmy leaned forward. "Listen, Al. Car alignment's a game for small-time chumps.. Now aligning IS, there's a cash cow," he whispered. "Chief information officers will keep shelling out big bucks to anyone who promises to make it happen. They're just Rambler owners with deep pockets," he said. "But cars do get aligned, sometimes. IS never will."

"Well, yes, it's difficult. . . ."

"Nah, impossible," Jimmy snapped. "Listen up. Everyone's trying to figure out the value of information technology to a business, right? If you don't know that, how can you align IS to the business? And CEOs and chief financial officers don't know diddly-squat about how to manage IS. You can't align what you can't manage."

"You have a point," I said.



"Two points and counting. Do you think most CEOs really know where they're heading? They just muddle through and call that a strategy. How do you align IS to that?

"Even if the CEO does have a real strategy," Jimmy continued, "does he tell the CIO? Don't be naive. Do you really think CIOs are kept up to date on every business initiative, merger or buyout in the works? Come on, Al, would you share your most secret plans with someone who'll probably be gone in 18 months?"

"Probably not," I conceded.

"Then how can CIOs align IS with the business if they don't really know where the business is going? Besides, even if you reach Holy Alignment, every time the business hits a pothole, the alignment goes out of whack again," Jimmy said.

"You make it sound terrible."

"Don't get so teary-eyed. These IS managers think they're the only ones who are out of sync with the business. Name one factory manager who always has the right equipment, work processes and people in place whenever the market shifts."

Jimmy leaned back in his chair. "Alignment? It's just a mirage. Yeah, it happens sometimes, and you've got to try to do it. But Al, you're more likely to win the Irish Sweepstakes and the state lottery on the same day."

"Jimmy, I can't believe I'm hearing this. How did you get to know so much about aligning IS?"

"I used to be a CIO," he said, "until I wised up."

Alter is *Computerworld*'s senior editor, Managing. His Internet address is allan_alter@cw.com.

Thornton May

Taking electronic commerce 'literarily'

CIOs fall into four categories: Luddites, sleepers, neurotics and teen-agers.

Over the past six months, I've been speaking with chief information officers about how the Internet will affect their work. But most CIOs just seem befuddled. Maybe they're too exhausted from the client/server wars to exploit the opportunities of electronic commerce.

From the interviews, plus a survey of 600 IS organizations and some reality checks, I've found that CIO behaviors toward the Internet are similar to the messages contained in four great pieces of American literature:

Some CIOs take a *Rip Van Winkle* approach.

- **Nathaniel Hawthorne's** *The Scarlet Letter*. This American classic presents the conflict between self and society. Hester Prynne waged a seven-year rebellion against society. Society said "Don't," and she did. Hester wore her V-chip on her shoulder.

The research finds that 13% of the organizations surveyed deny their employees access to the Internet because they fear illicit use of unsanctioned, semiwicked sites and possible viral infection. I say, better expose yourselves to the virus if only to build up your antibodies. Leaders of these nonadopter companies liken cyberspace to unlit portions of New York's Central Park. They think they are protecting their people from cybermuggings.

The "A" for these hard-core Luddites stands not for "adultery" but for "asynchronous." They stand no chance of dealing with their customers or suppliers on a real-time basis.

- **Washington Irving's** *Rip Van Winkle*. This is the tale of a simple, good-natured man who slept through 20 of the most tumultuous years in American history (including the Revolutionary War). He avoided the trauma of having to figure out the newly defined political, social, economic and behavioral processes associated with living in a restless, broad-shouldered democracy.

We found about 7% of the IS units are adopting a "wake-me-when-it's-over, call-me-when-you-figure-it-out" attitude on electronic commerce. Like Rip, these sideline voyeurs will miss the pain of uncertainty. But they will also miss the joy of discovery and the profits of innovation. Sleepers live in a dream world where late starters can catch up. But in reality, the early-bird advantages are enormous.

- **Herman Melville's** *Moby Dick*. It isn't surprising that Melville dedicated his opus to Nathaniel Hawthorne. Where *The Scarlet Letter* dwelt on the obsession of not doing something, Melville's whale tale focuses on the obsession of doing something — two sides of the same coin, perhaps.

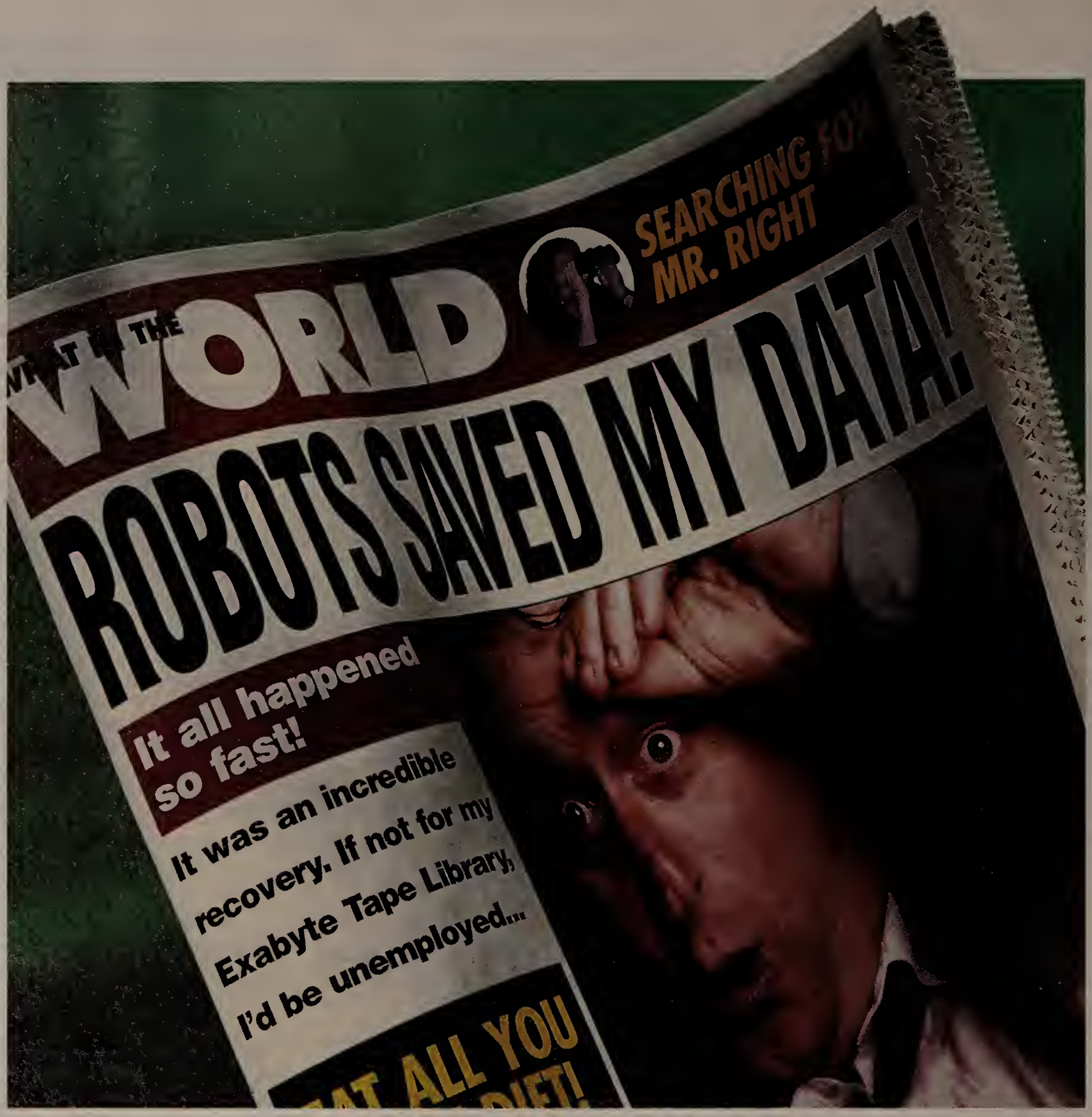
In 26% of the organizations, we found major, semiobsessive campaigns to stake out "the good real estate" in the Web gold rush. CIOs in these organizations irrationally avoid benefit-rich targets of less glamorous voice-response systems in their drive to be digitally au courant. These Internet-obsessed Ahabs are implementing Web technology without a clear Internet strategy. Remember: Ahab's heedless obsession led his ship and crew to oblivion.

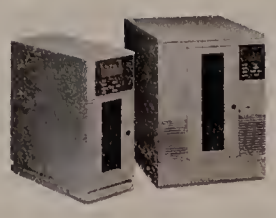
- **J. D. Salinger's** *Catcher in the Rye*. This is the story of an adolescent on the brink of adulthood. Holden Caulfield — like today's CIO — isn't perceived as an equal or an adult by his superiors.

In the survey, 54% of the organizations stand in that awkward technological zone of adolescence called electronic commerce. They earnestly want to do the right thing. They know that inactivity is wrong, and yet they lack the compass that experience and wisdom bring.

But CIOs who play the Caulfield role may be in the best position of all. They've created a "mediative space," that quivering blend of thinking, doing, reflecting, fixing and doing again. These are the organizations that are aware enough to know that they are adolescent in their use of Web technology yet confident enough to brave the embarrassment. They will emerge as fully functional, respected adults in the new world of electronic commerce.

May is a vice president at Cambridge Technology Partners, Inc. in Cambridge, Mass. His Internet address is tmay@ctp.com.





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Digital boosts AlphaServer line, 41

Servers & PCs

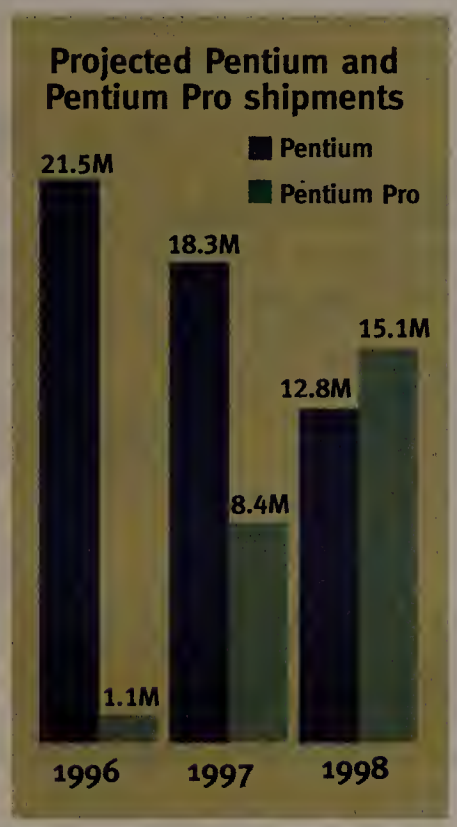
Intel cuts prices on Pentium Pro chips

But high-end desktops not for all users

By Bob Francis

Prices for Pentium Pro-powered desktop systems will soon fall below $3,000, making the high-end systems a more attractive offering to corporate users. But even price cuts may not lure information systems managers to the new technology because most companies are still shifting to Pentium-based systems.

Intel Corp. in Santa Clara, Calif., cut prices last week on its Pentium and Pentium Pro chips. In addition, the company introduced new chip sets and motherboards, which were also designed to lower prices on Pentium Pro systems. Intel cut prices on 200-MHz Pentium Pro processors to $707, down from $1,018 in February.



Source: International Data Corp., Framingham, Mass.

For the high end

"Pentium Pro is still for high-end users," said Erik Goldoff, IS manager at the Centers for Disease Control and Prevention in Atlanta. "Price cuts are nice, but it takes time to work new technology into your networks."

The price cuts should drop prices of desktop Pentium Pro systems down nearly $1,000 from current prices, analysts said. Intel is also shipping three standard Pentium Pro motherboards to manufacturers, which should get the new processors to market faster.

To further entice corporate users, Intel is including Desktop Management Interface systems management components on the motherboards to make those systems easier to manage, company officials said.

Intel is also hitching its Pentium Pro wagon to the Windows NT star. When the next version of Windows NT debuts sometime this summer, most systems manufacturers will begin loading it on the new Pentium Pro systems.

Despite Intel's renewed push, the market won't shift overnight, said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. In fact, "We don't see Pentium Pro surpassing Pentium sales until 1998," he said.

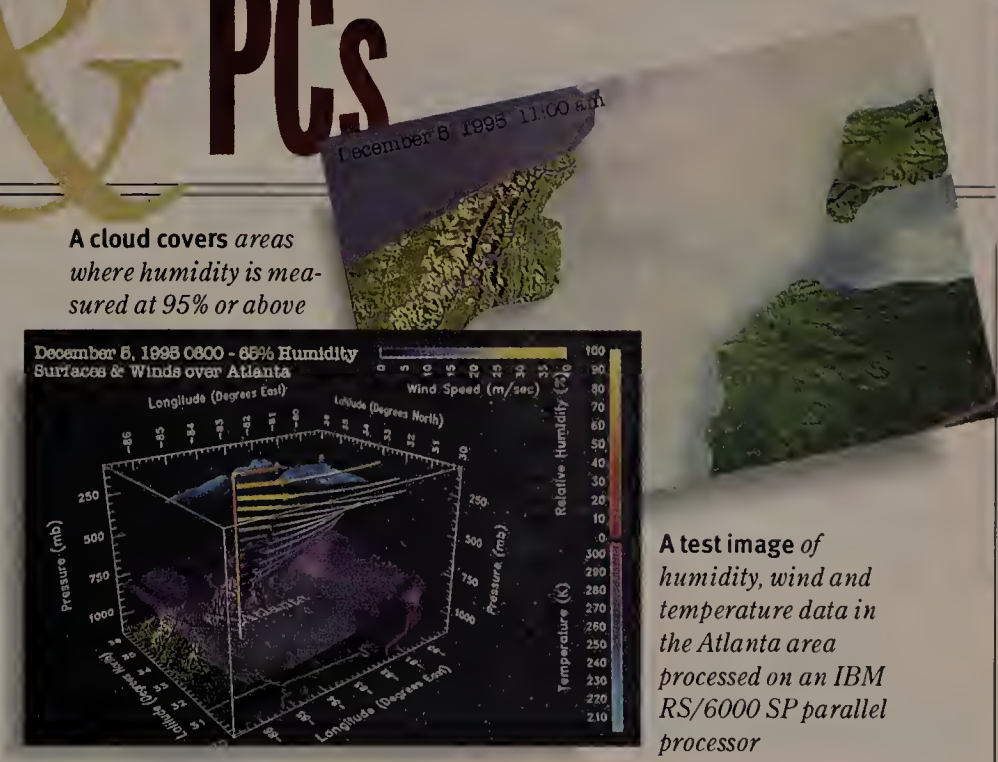
The Pro circuit

Not all Pentium Pros are created equal. While Intel pushes its current Pentium Pro processors to market, it is also planning a new generation of the chip later this year for audio and video applications.

Code-named Klamath, the chip will include multimedia extensions designed for running audio and video desktop applications.

In addition, Intel plans to open up a high-speed graphics pathway to the Pentium Pro chip early next year. Both of these design changes may cause added confusion for IS managers who are considering the chip for desktop applications.

"Intel hasn't made the path very clear on this," said an IS manager at a New York financial institution who asked to remain anonymous. "We'll have to have a better idea of their plans for this before we begin standardizing on Pentium Pros for the desktop." —*Bob Francis*



A cloud covers *areas where humidity is measured at 95% or above*

A test image *of humidity, wind and temperature data in the Atlanta area processed on an IBM RS/6000 SP parallel processor*

Forecasting system storms Olympics

By Craig Stedman

The National Weather Service probably won't win any gold medals for its massive technology modernization program, which has multiplied in cost and remains years away from being completed.

But a prototype of the future forecasting system is being put in place for the Summer Olympic Games, using Hewlett-Packard Co. workstations and an RS/6000 SP parallel processor loaned by IBM. Included will be new storm-warning and automatic forecast-generation tools plus a local-forecast modeling system that will let meteorologists develop separate short-term predictions for all 34 of the Olympic venues in and around Atlanta.

Modeling system

The local modeling capability is particularly intriguing to meteorologists and may eventually find uses in a variety of government and commercial applications. Software running on the 30-processor SP takes national weather images produced on a Cray Research, Inc. supercomputer outside Washington and processes them at a higher resolution. This provides a much clearer picture of storms, winds and other localized weather conditions.

"Rather than this blob of clouds, we can see that there's a thunderstorm in there. For field forecasters like us, we've never had that kind of capability before," said Lans Rothfusz, lead meteorologist for the Olympics at the weather service's office in Peachtree City, Ga., outside of Atlanta.

The national images are "too coarse" to pick up individual storms, Rothfusz said. But for the Olympics, the weather service will be able to forecast temperatures, storms and wind speed and direction for each of the competition venues at three-hour intervals.

Despite its potential benefits, local modeling isn't part of the weather service's plan beyond the Olympics. One roadblock is the cost of parallel systems such as the SP, which costs $1 million to $2 million for the kind of configuration installed at Peachtree City.

However, the government's Forecast Systems Laboratory, which put together the data collection and modeling software for the Olympics, is trying to get other federal agencies interested in the concept of local weather modeling.

Bill Snook, a meteorologist at the Boulder, Colo., lab, said a six-month prototype for tracking potential weather problems will be run next year for the Federal Aviation Administration on an Intel Corp. Paragon system installed in Boulder. The lab is also talking with the Air Force's global weather center in Omaha, which has its own SP.

Meanwhile, IBM officials said they plan to market the local modeling capabilities to private-sector customers such as airlines, agricultural businesses and commercial weather services. Other vendors are likely to do the same, analysts indicated.

The other pieces of the forecasting system have a more definite future in the weather service's 115 offices, although full deployment isn't scheduled to start until 1999.

The cost and length of the modernization continue to attract attention from government watchdogs. Budgeted at $1.4 billion in the mid-1980s, the project has ballooned to $4.5 billion, with $525 million of that slated for the new information processing and display system. A report by the General Accounting Office in February warned that the weather service still hasn't proved that the full revamp is needed to improve forecasts and reduce staff.

WEEK 17 OF 19

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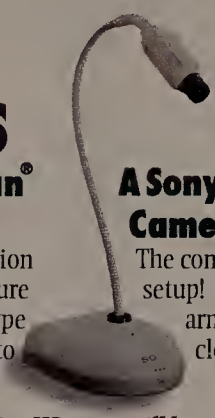
A Sony CD-ROM Discman® PRD-150 Player

A fully portable multimedia solution for laptop computers! A full-feature CD-ROM player with PCMCIA Type II card plus stereo headphones. Photo CD and Windows compatible.



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A Sony CCD-PC1 Computer Color Video Camera

The complete video-conferencing and audio-video capture setup! A high-resolution color video camera on a 10" flexible arm with built-in microphone, manual focus control for close-ups and an iris control for lighting adjustments.

Grand, First and Second Prize Winners will be announced by July 15, 1996.

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1 Sony Magic Link™ Personal Communicator

Use smart messaging to help manage all your electronic communications – fax, e-mail, phone or pager.

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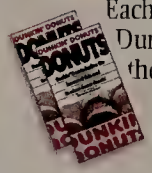

Each Tuesday five winners and their associates (up to 20 people) will receive Dunkin' Donuts gift certificates for 3 dozen donuts, a Dunkin' Donuts coffee thermos, a pound of ground coffee plus an engraved TechnoTrivia plaque.

Please pass along this issue of COMPUTERWORLD to an associate after you have finished playing the game.

This Week's TechnoTrivia™ Questions

Find the answers in this issue of Computerworld

1. What was the megahertz clock speed of the original IBM Personal Computer?
2. What company's headquarters houses the display of the world's first transistor?
3. Who wrote the simple standard for hypertext publishing called the World Wide Web?
4. In 1989, a Utah landfill became the final resting place of 2,700 of what computer model?
5. What history-making video game displayed only the instructions "Avoid missing ball for high score?"

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Amdahl, HDS follow Parallel Sysplex path

Vendors to offer hardware, software to link System/390s

By Michael Goldberg

Since IBM introduced Parallel Sysplex in 1994 as a way to lash multiple mainframes together around a shared set of data, users have had only one place to go for the technology. Not any more.

System/390-compatible vendors Hitachi Data Systems Corp. in Santa Clara, Calif., and Amdahl Corp. in Sunnyvale, Calif., each have announced offerings to enable users to step into the parallel processing realm (see chart).

Parallel processing

Users and analysts generally hailed the development as vital for the competitive future of System/390 rivals. They also said it was good news for mainframe consumers who seek more choices and price points in the market.

"From the hardware perspective, any vendor that doesn't provide the [equipment] to play in the Sysplex environment is only going to be finding themselves" looking in from the outside, said Eugene Brown, assistant vice president of information systems operations at Rite Aid Corp. in Camp Hill, Pa. As an Amdahl and IBM shop, Rite Aid would have shifted away from Amdahl systems if the vendor didn't support Parallel Sysplex technology, Brown said.

Mike Lopez, a hardware team leader at First Security Bank Corp. in Salt Lake City, said his financial institution needs an around-the-clock data center and he said he considers Parallel Sysplex to be an important capability. He said his firm's decision to invest in HDS' GX 8000 series was based in part on the vendor's plans for a Parallel Sysplex path. He can't connect his IBM System/390 to the GX 8000 box without connecting technologies from both vendors, he said.

Through hardware links and accompanying software, Parallel Sysplex technology allows as many as 32 connected System/390 mainframes to share data. This can result in larger configurations for processing scalability and an added level of resilience if one of the computers fails.

Depending on how many machines are linked together, a Parallel Sysplex complex requires at least one System/390 to act as a coupling server.

Both Amdahl and HDS use their newest air-cooled CMOS-based mainframes to form the foundation of their Parallel Sysplex offerings: HDS' Pilot servers and Amdahl's Millennium series.

The vendors also offer software to set up an installed mainframe — or a portion of an installed machine — as a Parallel Sysplex coupling server for tests or operation. This means they have caught up to IBM in this important field of mainframe computing, said John Phelps, an analyst at Gartner Group, Inc. in Atlanta.

John Young, an analyst at Clipper Group, Inc. in Wellesley, Mass., said Amdahl's and HDS' moves have "legitimized the whole marketplace of System/390 and Parallel Sysplex."

Young said Amdahl's plan to set up an Enterprise Computing Center next year to test customers' Parallel Sysplex configurations is a distinguishing mark that IBM and Hitachi need to watch. "What you're getting from Amdahl is a business-centered, solutions-oriented perspective. That's unique from a marketing perspective."

Parallel worlds

Amdahl and HDS are following IBM into the Parallel Sysplex world with hardware and software to link System/390 processors

Vendor	Product	Availability
Amdahl	Millennium Coupling Server	Q1 1997
	Parallel Sysplex testing environment	Q4 1996 (5995M models) Q1 1997 (Millennium Global models)
HDS	Voyager Coupling Facility	October
	Voyager Coupling software for current owners of HDS systems	This month (GX 8000 models and Skyline models); October (Pilot models)

Digital boosts AlphaServer line with upgrades, price cuts, faster chips

By Jaikumar Vijayan

Digital Equipment Corp. is making room for the newest arrival in its AlphaServer family.

The AlphaServer 4100, codenamed Rawhide, brought price cuts and upgrades to the AlphaServer 2000 series of symmetrical multiprocessing (SMP) servers. The company also announced the availability of faster Alpha chips in the AlphaServer 8000 family.

The announcements are part of an effort by the Maynard, Mass., company to differentiate its product lines and make way for the AlphaServer 4100, a midrange server.

Digital will roll back prices on the AlphaServer 2000 by as much as $5,000 and by more than $4,000 on the 2100. With these cuts, an AlphaServer 2000 will start at just over $19,000, and the 2100 will start at $27,930.

Digital also announced a series of related promotional offers for SMP and processor upgrades on the 2000 series and introduced new 375-MHz processors to the lineup.

One user, at least, wasn't particularly impressed by the latest cuts. "Given the better scalability of [the AlphaServer 4100], people are going to choose that if that is what they really need anyway," said Fernando Yson, a systems manager at Cost Care, Inc. in Huntington Beach, Calif.

Digital also boosted processor performance on its AlphaServer 8000 family of enterprise servers with the addition of a 400-MHz Alpha processor. The price cuts on the 2000 series are effective immediately, but the processor and SMP upgrades won't be available in either series until the last quarter of the year.

The moves herald the arrival of the 4100 series, a quad-processor midrange system that fills a yawning gap between the 2000 and 8000 series [CW, April 8].

With Rawhide, Digital has migrated to the midrange its Very Large Memory (VLM) technology and full 64-bit Peripheral Component Interconnect (PCI) support. Using VLM, users can load up to 4G bytes of main memory on their system — a key performance enhancing capability that substantially speeds up large applications [CW, April 22]. The 4100 supports Windows NT, OpenVMS and Digital Unix operating systems.

"One of the most significant parts of the announcement is that Digital is bringing scalable high-end technology to platforms like NT," said Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass.

Digital's AlphaServer 4100 plugs a hole between the AlphaServer 2000 and 8000 series

Features include:

Processor support:	Up to 4
RAM:	4G bytes
System bus:	1G byte
I/O:	64-bit PCI
Supports:	Unix TruCluster, OpenVMS and Windows NT clusters

New Products

MicroTouch Systems, Inc. has rolled out TruePoint SpaceSaver, a flat-panel resistive touch monitor.

The Methuen, Mass., company said TruePoint SpaceSaver is a 10.4-in. flat-panel display that incorporates membrane touch technology and works with any input device, from a gloved finger to a stylus. It has video drive electronics that allow for the unit's video cable to plug in to any VGA card.

Pricing for TruePoint SpaceSaver starts at $1,989.

▶ *MicroTouch Systems*
(508) 659-9000

The Kleban Group has introduced Studio-in-a-Box, a system for taking pictures and importing them into databases or applications.

The Chatsworth, Calif., firm said Studio-in-a-Box combines a digital camera, lightbox and database to let users take a picture and store the image in 25 seconds. The product doesn't require film, captureboards, scanners or video. It costs $4,500.

▶ *The Kleban Group*
(818) 700-9504

Pioneer New Media Technologies, Inc. has announced Super 10X, a 10-speed CD-ROM drive.

The Long Beach, Calif., company said Super 10X uses Constant Angular Velocity disc rotation for high-speed data transfer rates and fast access times. When a fast access time is essential, the product offers data transfer rates of 660K to 1.5M byte/sec.

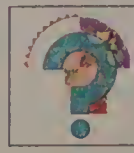
Super 10X features a 128K-byte internal buffer and supports Plug-and-Play for Windows 95. It will be available in Advanced Telephony Application Programming Interface and SCSI-2 interfaces.

Pricing for Super 10X will be available this fall.

▶ *Pioneer New Media Technologies*
(310) 952-2111

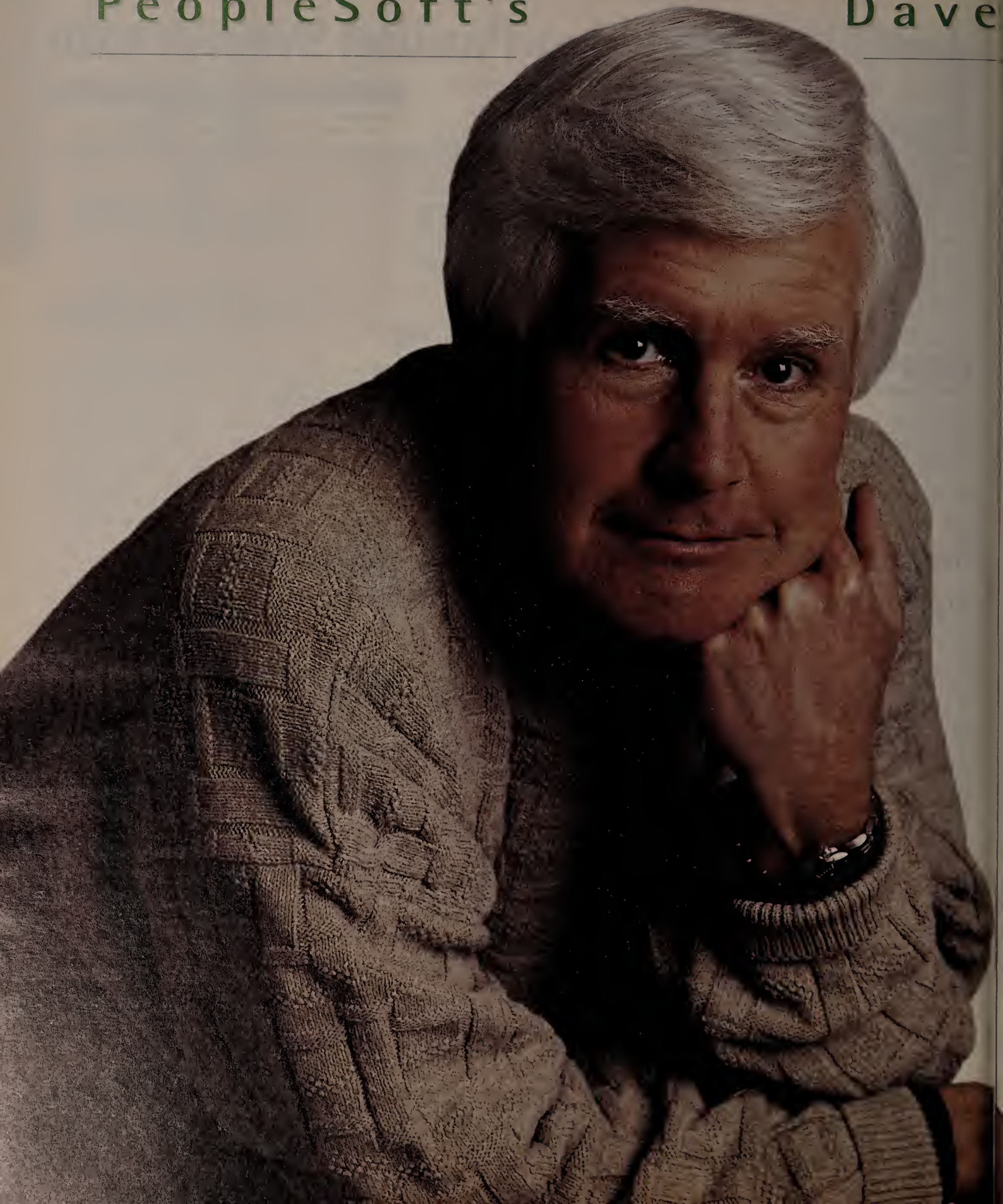
Product short

CMS Enhancements, Inc. has introduced Interact-4 CD-ROM, a quad-speed, four-disc CD-ROM changer. It is compatible with Windows 3.1 and Windows 95 and was designed to fit into a PC's half-height 5¼-in. drive bay. Cost: $299. CMS Enhancements, Anaheim, Calif. (714) 517-0915.



4.77-MHz clock speed

PeopleSoft's Dave



Duffield, on Informix.

Dave Duffield
CEO, PeopleSoft

"As a worldwide provider of client/server business applications, we depend on powerful database technology that enables our applications to meet our customers' needs. That's why we partner with Informix. Their leading technology and commitment to customer success fit perfectly with our own philosophy. Together, we help our customers manage a constantly evolving enterprise."

Kathy Gogan
VP Partner Marketing, Informix

"Our database technology was architected to meet the demands of dynamic organizations. PeopleSoft is taking advantage of that by building high-performance, highly scalable applications that put customers a step ahead, and keep them there."

At Informix, we deliver innovative database technology for a growing number of industry leaders worldwide. By teaming with companies who share our vision, we provide our customers with the solutions they need to stay ahead of change, make the most of emerging opportunities, and gain a competitive edge in business.

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Index engines speed database queries, **46**

Software

Business users just say NO to Win 95 apps

User confusion over NT delays Windows 95 application adoption

By Lisa Picarille

Windows 95 applications haven't yet made real inroads into corporate America.

Many information systems shops are biding their time, planning to eventually roll out the 32-bit applications that Windows 95 supports. But they are in no rush, and just about the only corporate Windows 95 applications selling in quantity are Symantec Corp.'s and McAfee Associates, Inc.'s antivirus software and Microsoft Corp.'s Office 95 suite.

That's certainly the case at Kaiser Permanente Health Plan, Inc. in Atlanta. "We are migrating to Office 95 but don't feel any pressure to go to other Win 95 apps. We'll purchase them only as needed," said Gary Wilkerson, supervisor of end-user services. The firm plans to roll out Windows 95 to all of its 1,500 users over the next couple of months. "We're really not in a big hurry," he said.

Dwight Davis, editor of "Windows Watcher," an industry newsletter in Redmond, Wash., estimated that Microsoft has sold more than 25 million copies of Windows 95. But the operating system has done "less than stellar in the corporate market" because of mixed messages from Microsoft about its forthcoming Windows NT Version 4.0, which is being positioned as a corporate operating system. Microsoft originally told customers that Windows 95 should be their desktop operating system of choice.

"Windows 95 apps are not going to take off until the whole industry gets over this Windows 95 and Windows NT hair ball. Users probably won't be deciding which operating system they want until this summer" and then will start buying applications, said Chris Le Tocq, an analyst at Dataquest, a market research firm in San Jose, Calif.

Ann Griffith, research manager at the Software Publishers Association, an industry trade organization based in Washington, said about $1 billion worth of Windows 95 applications across a range of software categories was sold in the last five months of 1995. In contrast, Windows 3.x applications accounted for more than $5.7 billion for all of last year.

Other customers said they are taking their time with most 32-bit applications. "We are using Office 95 as the standard on everyone's desktop, but the rest of our applications are not commercial, off-the-shelf products," said John Parkinson, director of Emerging Technologies Research at Ernst & Young in Los Calinas, Texas, which has 1,000 PCs.

Ernst & Young was almost entirely a Macintosh site, but it is phasing out all Macintoshes in favor of PCs with Windows 95.

"The real rationale for that move was that we had to develop new tools for our auditors and only wanted to develop for one platform — and we had to make a choice," Parkinson said.

Other Windows 95 users are closely following the applications market but have yet to purchase 32-bit software.

"We are still running a lot of the old 16-bit applications," said Jeff Johnson, director of MIS at Pacifica Hospital in Huntington Beach, Calif., which has about 100 Windows 95 users. "But Windows 95 itself is so much better that we aren't going to buy any more 16-bit applications. We want Windows 95 software, period."

However, Johnson said that so far, the company is seriously looking to buy only the 32-bit version of Caere Corp.'s OmniPro scanning package.

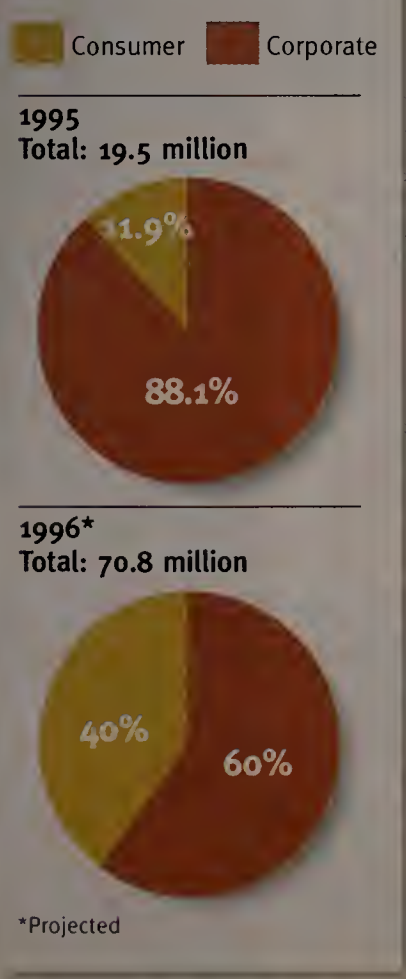
To try to generate some Windows 95 application sales, most major software developers are turning to the Internet. Recently, there has been a glut of new Windows 95 applications that capitalize on the popularity of the Internet by adding the ability to export documents to the World Wide Web, establish direct connections to the 'net and browse the Web.

Although one analyst said Windows 95 and the Internet work well together, he agreed that the Internet phenomenon would have occurred with or without Windows.

However, "Windows 95 makes it easier to use the Internet because Windows 95 includes The Microsoft Network and built-in browser," said Michael Pinckney, research director at Gartner Group, Inc., a market research firm in Stamford, Conn.

But it is hard to measure the impact of the Internet on Windows 95 application sales because developers are adding Internet features to a variety of product categories, said Brian Moura, assistant city manager for the city of San Carlos, Calif.

Worldwide shipments of Windows 95



Source: International Data Corp., Framingham, Mass.

Antivirus programs on top

Most users have too much invested in existing software to load a new operating system without relying on utilities that scan for viruses.

So it is no surprise that several of the best-selling Windows 95 applications are antivirus programs from Symantec and McAfee Associates.

Both Symantec's Norton Antivirus and McAfee's Viruscan were among the Top 5 best-selling Windows 95 applications for March, according to PC Data, a market research firm in Reston, Va.

The Windows 95 operating system includes limited antivirus capabilities. At the same time, the Boza Virus from Australia, which targets Windows 95's 32-bit files, has emerged, spurring sales of Windows 95 antivirus programs. The Boza Virus wipes out some files completely and corrupts data in other files.

Observers said that most antivirus applications are aimed at renegade viruses that reproduce, overwrite data and erase files inside DOS executable files. Both Windows 3.x and Windows 95 contain DOS executable files, so protection from viruses is a necessity.

Officials at McAfee and Symantec said the Windows 95 versions of their antivirus programs are outselling their Windows 3.x counterparts. Chris Harget, product manager for McAfee's Viruscan, said the Windows 95 version of Viruscan now represents approximately 71% of the product's total sales.

— Lisa Picarille and Charles Babcock

Index engines speed queries

Sometimes better than more processors

By Dan Richman

If your decision-support system isn't performing as well as you'd like, you can improve it by using an external indexing engine.

How data is indexed is key to how quickly a query will execute. External indexing engines usually reside on a stand-alone machine that includes a database management system. The engines use indexing algorithms and techniques that the indexing schemes built into other DBMSs can't match, said Neil Raden, president of Archer Decision Sciences, Inc. in Santa Barbara, Calif., a warehousing consultant.

Database access

The external engines aren't inexpensive; they cost between $25,000 and $100,000, depending on the platform. But the engines can be cost-effective, and some sites report they are the only way to execute certain queries.

Other options

Alternatives include hiring consultants to tweak a system for maximum performance, buying more processors and memory, buying ultrafast storage units and upgrading the version of the DBMS already in place. If it seems those options might help, consider whether they also offer better value, experts say.

For example, adding processors would have made queries run faster at The Andersons, Inc., an agribusiness in Maumee, Ohio. But the company also needed to let Microsoft Corp. Visual Basic applications run against its Hewlett-Packard Co. MPE/IX-based Image hierarchical DBMS — something the DBMS couldn't yet do. Simply adding processors wouldn't have allowed that, said Judy Zilka, manager of grain information systems at The Andersons.

Adding processors also wouldn't have allowed searches for customers by ZIP code, name or telephone number.

These are basic capabilities for relational database management systems, but they can't be performed with hierarchical DBMSs, Zilka said. "Using Omnidex gave us those capabilities, and we couldn't have gotten them otherwise," she said.

Omnidex, from Dynamic Information Systems Corp. in Boulder, Colo., cost The Andersons about $25,000. But that was far less than the $175,000 a consultant had recommended the company spend to replace its system with Oracle Corp.'s Oracle7 RDBMS on an Intel Corp.-based machine.

External indexing engines can help RDBMS users, too. Three years ago, plowing through tens of millions of Sybase, Inc.'s Sybase SQL Server customer records in search of likely insurance buyers took too long at National General Insurance Co., said senior marketing analyst Stephen Enderbrock.

The St. Louis company considered adding processors to its four-processor Sun 2000. But the problem was more I/O than CPU capacity, so that wouldn't have helped, Enderbrock said. Using less data or summarized data would have sped up performance but sacrificed completeness. National General chose to spend $97,500 on Information Retrieval Engine, an external indexing engine from Mercantile Software Systems, Inc. in Piscataway, N.J.

But add-on indexing engines aren't cure-alls, warned Clark French, director of product development for Sybase's IQ. When used with RDBMSs, they generally understand only standard SQL, not the extensions invariably added by RDBMS vendors.

That means applications often have to be stripped of vendor-specific extensions, or rewritten entirely, to be used with an external engine.

Intranet next step in data storage

By Juan Carlos Perez

If the data stored in your company's databases and file servers has become unmanageable, Sequent Computer Systems, Inc. says it can help.

Sequent said that with its Corporate Digital Library (CDL), it can build a tailor-made intranet system, index all the dispersed data and create a central repository.

"It's a next-generation data warehouse," said Gary Smaby, president of the Smaby Group, Inc., a consultancy based in Minneapolis.

Many components

The CDL comprises Sequent Symmetry systems, Sequent data management software and third-party software, including World Wide Web browsers, search engines and database applications.

Sequent could implement a CDL on non-Sequent hardware, but it won't do that, according to company officials.

And, depending on the Symmetry model that a customer has, the user may or may not have to upgrade to new hardware to handle the CDL.

With a Web browser, users can annotate documents, search for and retrieve documents, monitor document usage and provide for document security.

At Source Informatics, Inc., a massive repository of health care data with two offices in the U.S. and 13 offices abroad, employees share information through electronic mail. The Phoenix-based company is seriously considering implementing Sequent's CDL because "it's a solid management infrastructure to make data useful and accessible," said Chief Information Officer Larry McAferty.

Sequent's Corporate Digital Library lets users do the following:

- Publish comments and annotations on existing documents
- Monitor and evaluate document usage
- Search and archive E-mail threads
- Search for and access documents
- Provide document security

Anyone can set up a generic intranet or Web-enable the company network, said Jonathan Eunice, an analyst at Illuminata, Inc., a consultancy in Nashua, N.H.

"But this takes it a step further and adds document management to an intranet so users can access those files that are now in the company data junkyard," he said.

Sequent's CDL will succeed only if it can be customized and extended with third-party software to the point where it can fit a business like a glove, said Terry Bennett, president of The Bennett Co., a consultancy in Portland, Ore.

The CDL is available now; a Sequent spokesperson estimated the starting price for a fully implemented CDL at about $750,000.

Apps let users access ordering, scheduling data

By Julia King

Oracle Corp. is shipping three Internet-ready applications that do more than provide browser access to real-time information systems.

Internet applications

The new applications — Web Customers, Web Suppliers and Web Employees — let users process a full range of supply-chain transactions over the Internet or an enterprise intranet.

Using Web Customers, for example, a company's clients can place orders, schedule shipments and enter return requests in real time.

Beyond that, users can link to other outside supply-chain services, such as an express delivery service, via the application's built-in Hypertext Markup Language pages. The Web Customers application has more than 100 such pages, which companies can configure to follow their unique business process flows.

Big business

Worldwide revenue from Internet software, including applets and Internet-ready applications, will reach $8.5 billion in 1999, according to a recent report by Forrester Research, Inc. in Cambridge, Mass.

Other client/server vendors have furnished browser access to their software. But Oracle is the first to ship Internet-ready applications, according to John Bermudez, an analyst at Advanced Manufacturing Research, Inc. in Boston.

"While Internet-enabling applications is certainly a cool thing to do these days, Oracle is taking it to a level where it is actually useful," Bermudez said.

Customers can use Oracle's workflow technology, which comes with the applications, to create the various steps and links in their electronic supply chains. The linking capability also lets users "drill down" to other supporting or background data, such as past order and credit information, or to other Oracle applications.

"This is an entirely new class of applications built to satisfy the demand for self-service," said Peter Heller, director of product marketing. The Internet applications require Oracle's 10SC business applications; the Internet packages run on top of that. Pricing on the three products is $25,000 each per server.

Not now, thanks

But some Oracle users have no desire or plans to open up their corporate systems to outsiders — at least for now.

"That's not something we'd be interested in. We've got established business practices that work for us, and our financial and distribution data is something we protect," said Michael Dorfman, database administrator at Ben & Jerry's Homemade, Inc. in Burlington, Vt. The ice cream vendor now uses Oracle's financial applications.

Similarly, Whirlpool Corp. in Benton Harbor, Mich., which uses Oracle's financial and purchasing systems, doesn't foresee that is will open its systems to Internet-based trading partners right away.

"We're still developing a strategy for the Internet," said Steve Rush, manager of global information technology planning.

"Within the last five years, a lot of companies just started to focus on an electronic data interchange strategy. Things are moving so fast that we're not sure yet about the Internet," Rush said.

Oracle's Internet-ready applications

Web Employees: LETS USERS ACCESS AND UPDATE HUMAN RESOURCES INFORMATION OVER A CORPORATE INTRANET

Web Suppliers: LETS TRADING PARTNERS ACCESS PRODUCTION AND SUPPLY SCHEDULES AND OTHER DATA OVER THE INTERNET

Web Customers: GIVES USERS ACCESS TO REAL-TIME DATA TO ENTER ORDERS AND PROCESS OTHER TRANSACTIONS

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Application Development

SQL Server 6.5 aims to unseat Unix rivals

By Howard Millman

One staple of many science classrooms is the "Evolution of the Species" road map. The juncture where humans stood on their own two feet was the third frame from the left. That's where Microsoft Corp.'s SQL Server 6.5 stands today on the evolutionary ladder. Its peers in the Unix market are several rungs ahead.

Microsoft, intent on establishing SQL Server as a worthy contender to Unix database management system packages, has enhanced its premier database, and it is easier to build, deploy and manage distributed client/server applications. The upgrade improves support for distributed transactions and provides more wizards and tools that let Internet and intranet browsers extract data.

Overall performance has been improved by 10% to 20%, Microsoft says. Factors for this boost include increased use of parallel tasking in the database engine, expanded use of native Windows NT threads and a new Dynamic Locking technology. Parallel tasking handles multiple tasks simultaneously. Dynamic Locking lets SQL Server choose whether to lock the row, page or table to maximize concurrency and speed.

Review

We conducted a test-drive of the final beta version, running SQL Server on IBM PC Co.'s 750s and Microsoft's NT Advanced Server. The beta differs from the now-shipping general release only in that the beta lacked documentation.

SQL Server's Distributed Transaction Coordinator (DTC) manages the fail-safe distribution of updates across multiple SQL Server systems. DTC's two-phase commit protocol automatically ensures that when SQL Server 6.5 issues an insert/delete/update transaction, all related resources participate in the transaction's execution. If a network disconnect occurs or a server crashes, the DTC will roll every server back to its original state.

DTC's support of transaction processing monitors, such as Transarc Corp.'s Encina and Novell, Inc.'s Tuxedo, allows SQL Server to replicate its information to IBM's DB2, Microsoft's Access, Sybase, Inc.'s SQL Server and databases from Oracle Corp. as well as other Open Database Connectivity-compliant databases.

We explored the enhancements to SQL Enterprise Manager, a useful tool that should simplify monitoring and controlling of all networked servers. It lets users do software inventory and distribution and error recovery, among other tasks.

Another tool, the DBA Assistant, helped us automate routine maintenance chores. Designed to reduce the element of chance in systems maintenance, the DBA asked us a series of questions and then set up a daily and weekly maintenance schedule. The maintenance actions that the plan allows, however, are limited to a few of the most common tasks.

Features omitted from the current version, including graphical entity-relationship diagramming and support for updates and deletes, will appear in the release due out in mid-1997, according to Microsoft.

Unlike its more portable competitors, SQL Server runs only on Windows NT. This not only ties SQL Server users to a Microsoft operating system, but it also restricts users because NT's support scales to four processors — although 4.0 on certain architectures is supposed to scale to up to eight. That still falls short of Unix's support of dozens, even hundreds, of processors.

On the plus side, SQL Server's tight integration with NT lets it seamlessly provide NT services such as security, parallel multithreading, event logging, performance monitoring and asynchronous I/O.

Data warehousing and extraction

This release adds some modest data warehousing and decision-support features to Transact SQL, the software's integrated procedural language. New extensions to "Rollup" and "Cube" operators allow programmers to write procedures that assemble multidimensional superaggregates — the presentation of rows that contain summarized data from aggregate rows. Transact SQL also enables one server's stored procedures to start a distributed transaction that will invoke procedures stored in remote servers.

A new data pipe capability lets Version 6.5 collect data from SQL Server and other vendors' databases for consolidation into a data warehouse on SQL Server.

We welcomed a resolution of an earlier shortcoming: the inclusion of Insert row-level locking. Row-level locking minimizes contention among multiple users trying to access the same data, a necessity for enterprisewide databases. SQL Server currently offers support only for inserts, not for updates or deletes. However, insert transactions are most likely where contention will occur.

According to Microsoft, support for updates and deletes will appear in the SQL Server release due out in mid-1997, along with another enterprise-oriented feature: graphical entity-relationship diagramming tools.

Version 6.5 also adds new options to back up or restore a single table in addition to an entire database. Microsoft should carry this one step further and enable backing up/restoring multiple, but not necessarily all, tables.

Web links

We also liked the built-in SQL Internet Connector and its Web Assistant. This Wizard-like interactive macro helped us automatically create a Hypertext Markup Language document from any table or query. Using forms, we could query and update the database. Instead of manually updating World Wide Web pages, Web Assistant will automatically update the pages on a predefined schedule or if the source data changes.

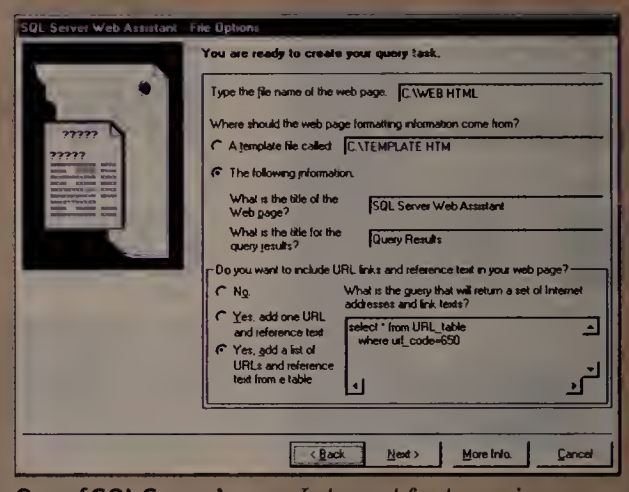
With the replication, Web access and fail-safe procedures in this release, Microsoft climbs one rung higher toward its goal of establishing SQL Server as an enterprise-class database manager. But to achieve its lofty goal of displacing entrenched Unix database managers, SQL Server still has a long climb ahead of it — in scalability, among other factors.

Millman, based in Croton, N.Y., operates the Data System Services Group, a networking and problem-solving consultancy. He can be reached at hmillman@mcimail.com.

SQL Server 6.5
Microsoft Corp.
Redmond, Wash.

Pricing: $999 for the server license; single client-access license $149; volume discounts and package pricing available

Overall rating: B+, Internet hooks, cross-platform replication facilities and enhanced data integrity procedures are the most compelling improvements



One of SQL Server's *new Internet features is a Web Assistant, which updates Web pages on a schedule*

New Products

Aimtech Corp. has introduced Jamba, a visual authoring tool for creating applets based on Java, Sun Microsystems, Inc.'s Internet development language.

According to the San Jose, Calif., company, Jamba lets developers and webmasters create interactive, media-rich Java applets without programming or scripting.

Jamba developers use a page-layout environment to specify "live" objects by dragging and dropping them. Objects are assigned content — animation, graphics and audio — as well as actions, which lets developers create interactivity.

Jamba also offers a series of templates that include backgrounds and interactive elements designed to accelerate the development of interactive multimedia applications.

Jamba will be available by the end of June for Windows 95. Jamba applets initially will be delivered through Java-enabled browsers. Pricing starts at $495. A beta version and demonstration are available at Aimtech's World Wide Web site at http://www.aimtech.com.

▶ *Aimtech*
(603) 883-0220

Channel Islands Software, Inc. has introduced DFP 3.2, a Digital Control Language (DCL) code to Fortran precompiler.

According to the Springville, Calif., company, DFP 3.2 decreases execution time and increases security of DCL for Digital Equipment Corp. OpenVMS running on Alpha computers.

It was designed to give Alpha programmers and systems managers the same capability as the VAX version to decrease execution time by reducing I/Os, page faults and CPU cycles.

DFP 3.2 was also designed to eliminate the granting of privileges on a user level to improve security for VAX and Alpha computers running DCL.

Pricing starts at $695 per systems license.

▶ *Channel Islands Software*
(209) 539-0314

Visual Components, Inc. has unveiled VisualWriter, an OLE custom control designed for visual development environments.

According to the Lenexa, Kan., company, VisualWriter lets users embed images and controls in text files so that text flows around the embedded images. Embedded images can be stored as data in a text document or with a reference to the original image.

VisualWriter can read and write rich text format documents, and it includes controls for creating text windows, rules, button and status bars.

Pricing starts at $249. More information is available on Visual Components' home page at http://www.visualcomp.com.

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Developers get taste of visual Java

By Frank Hayes

Java's got to get easier, users say — and some new tools just might make it so.

Corporate developers are struggling to figure out development for internets, intranets, the World Wide Web and Java. And they hope visual tools will cut out some of the time — and pain — currently required to build Web applications that use Sun Microsystems, Inc.'s Internet development language.

"Java is neat, but it needs some help, and that help comes by way of visual development environments," said Alan F. Nugent, chief technology officer of the global strategy and advanced technology group at Xerox Corp. in Rochester, N.Y.

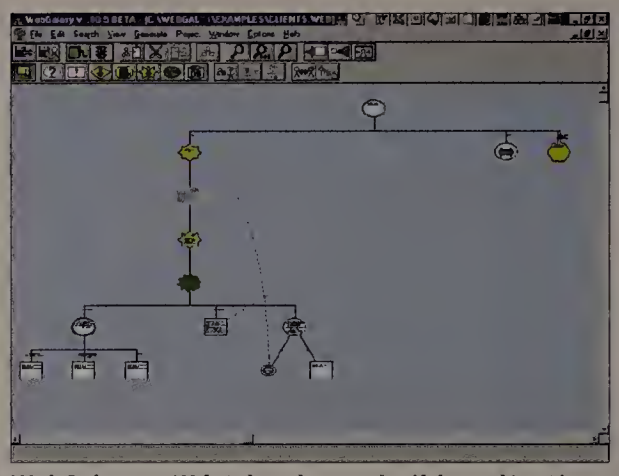
"Our people have developed our Web pages the long way in the past," said Pam Bowler, computer operations manager at Edmonton Telephones Corp. in Edmonton, Alberta. "We're looking at any opportunity to speed up our ability to deliver applications to our customers."

Developing Web applications is hard for two reasons. One is Java itself; it is becoming increasingly popular because miniature Java programs called applets can run on any computer equipped with a Java-enabled Web browser such as Netscape Communications Corp.'s Netscape and Oracle Corp.'s PowerBrowser. But Java is still an unfamiliar, object-oriented language.

Tools rollout

The other problem is the complexity of connecting those Java applets with databases and other facilities on Web servers and enterprise networks.

Fortunately, vendors are rolling out tools that will let developers design applications with a mouse and generate Java clients and back-end server code.



WebGalaxy *will let developers build applications by dragging and dropping blocks of information without having to write any code*

Allen Systems Group, Inc. in Naples, Fla., last week unveiled WebGalaxy, a graphical development environment for Microsoft Corp.'s Windows 95 and NT that generates Web pages and Java applets.

A server module handles database access and includes a knowledge-based system that will let a WebGalaxy application offer recommendations to users, company officials said.

Users can download a free, pre-release version of WebGalaxy at http://www.webgalaxy.net. The server runtime will ship June 1 and costs between $5,000 for PCs and $30,000 for high-end Unix servers.

Another source for these visual tools is SourceCraft, Inc. in Burlington, Mass., which last week said it will update its Windows-based Web development environment. ObjectCraft 2.0 generates C++ server code from visual designs, and the companion NetCraft visual environment generates Java client applets. ObjectCraft 2.0 also will ship June 1 and will cost $1,995. NetCraft is available for free at the company home page at http://www.sourcecraft.com.

New Products

Caere Corp. has unveiled OmniPage Pro 7.0 for Windows 95.

According to the Los Gatos, Calif., company, OmniPage Pro 7.0 is optical character recognition (OCR) software that converts paper-based documents and online faxes to text that can be edited and used in word processing and other text-based applications.

OmniPage Pro 7.0 features an AutoOCR Toolbar and Wizard that guide users through the OCR process, thumbnail representations of document images and advanced Windows 95 help screens. It includes support for more than 100 flatbed scanners.

OmniPage Pro 7.0 costs $499.

▶ *Caere*
(408) 395-7000

Consul Risk Management, Inc. has announced Consul/Command Verification Option 1.0 for RACF, an add-on utility software program. It was designed to help provide administrative control over Resource Access Control Facility (RACF) databases for IBM-compatible mainframes that use the MVS operating system.

Companies use RACF databases as a major component of security systems that protect information maintained on MVS mainframes. According to the Huntington Beach, Calif., company, Consul/Command Verification Option 1.0 gives administrators controls to enhance their RACF protection.

It includes authorization verification, keyword checking and default parameter checking.

Pricing for Consul/Command Verification Option 1.0 for RACF is based on processor size and starts at $7,000.

▶ *Consul Risk Management*
(310) 592-2458

Product shorts

Hewlett-Packard Co. has introduced Software Depot, a World Wide Web site (http://www.software.hp.com) from which users can access public-domain software and HP beta software for the Internet. Hewlett-Packard, Palo Alto, Calif. (415) 857-1501.... **Design Data Systems Corp.** has announced its Accounting and Distribution Applications for Apple Computer, Inc.'s Power Macintosh platform. This version will feature native Macintosh functions, including scroll bars, icons and pull-down menus. Pricing will start at $14,000. Design Data Systems, Largo, Fla. (813) 539-1077.

MEDICAL ALERT...
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Briefs

Instant order management

PeopleSoft, Inc. in Pleasanton, Calif., has announced an order management module, which will let salespeople and order-takers schedule deliveries and commit to specific shipment dates based on real-time manufacturing and production data from multiple plants. The order management software is based on real-time planning technology from **Red Pepper Software** in San Mateo, Calif.

Crystal clear reports

Crystal Computer Services, Inc. in Vancouver, B.C., is preparing Crystal Reports 5.0 for release in late June. The latest version of the report writer will have an object-oriented interface and several new report styles.

Java for Documentum

Documentum, Inc. will bundle Sun Microsystems, Inc.'s Java with its Documentum tool kit. The Pleasanton, Calif., firm makes document management software. The Java bundle will let users build Internet or intranet document management applications that are accessible via the Documentum desktop or World Wide Web browsers. The Java bundle will ship this month. It will be free to users of Documentum's developer tool kit. Documentum's developer's kit costs $20,000 for 10 users.

Sybase ships SQL Server 11

Sybase, Inc. in Emeryville, Calif., has announced SQL Server 11 for Workplace Unix, a low-cost, limited-platform version of its relational database management system. Available now for $995 per server and $195 per user, the package is licensed for use only on Sun Microsystems, Inc.'s UltraServer 1 and 2 and Enterprise 150 series, Hewlett-Packard Co.'s 9000 D and E series and IBM's RS/6000 E20, E30 and F30 series.

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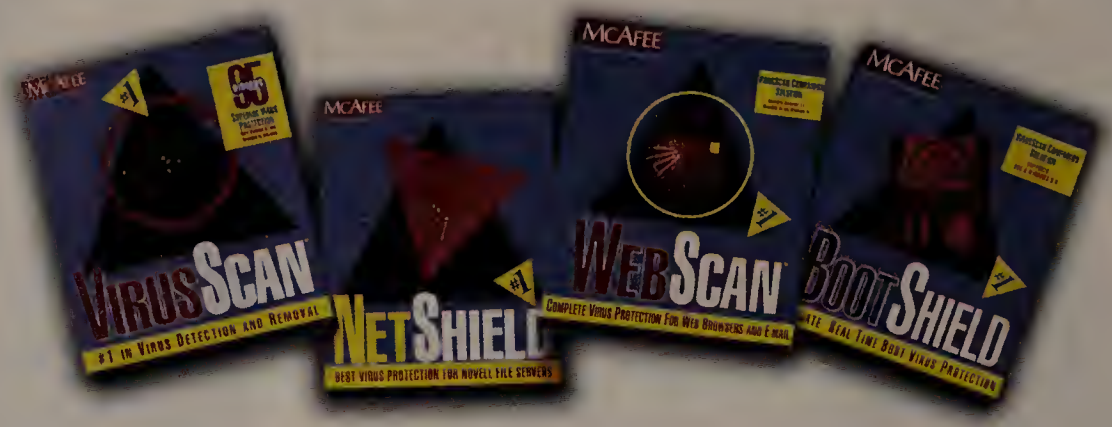
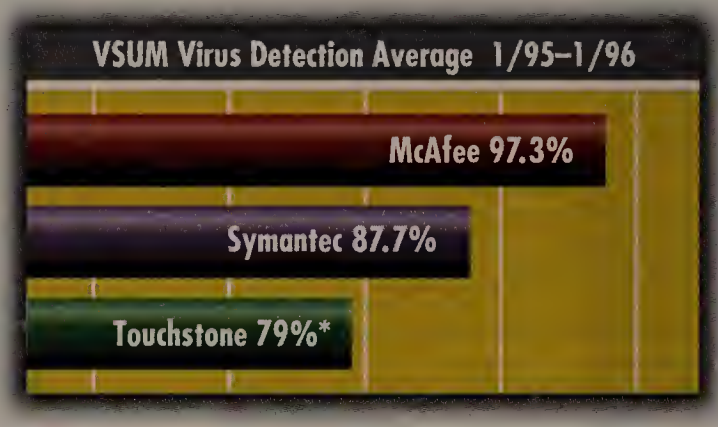


THE BEST VIRUS PROTECTION.



THE NUMBER ONE CHOICE WORLDWIDE.

Worldwide Standalone DOS and Windows Shipments – IDC, 1994

JUST SOMETHING TO THINK ABOUT BEFORE TRUSTING SYMANTEC.

"Symantec's little fib"–Information Week, 9/11/95

A lot of people disagree with Symantec's claim that they have the best virus protection. Even some Symantec people.

Vice President of Desktop Utilities, Ellen Taylor, said "we...regret any misconception..." that resulted from Symantec overstating its detection rate. *Information Week* described it as "Symantec's Little Fib." *The San Jose Mercury News* added that "Symantec, with NCSA's urging, has acknowledged that it may have exaggerated a bit..."

Another Symantec ad misleads readers by comparing their desktop anti-virus product with McAfee's WebScan for the Internet.

Advertising aside, just how good is Symantec virus protection? VSUM tests over the past year show that Symantec detected less than 88% of all viruses while McAfee VirusScan caught over 97%.

"Norton's chicken soup not as foolproof as advertised" –San Jose Mercury News, 9/15/95

Maybe that's why McAfee virus protection is trusted by over 10 million users. More than all others. And maybe that's why 80 of the Fortune 100 trust McAfee's products.

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Emerging client cache technology improves network, 55

The Enterprise Network

XcelleNet hooks up with Windows NT train

By Mindy Blodgett

XcelleNet, Inc. has jumped on the Windows NT bandwagon by integrating its RemoteWare middleware with Microsoft Corp.'s BackOffice suite.

While still developing for OS/2, XcelleNet has added several features to the NT version of RemoteWare, including new protocols and application agents to improve remote and mobile communications.

XcelleNet's middleware will let mobile and remote workers access the enterprise network.

Keith Gilbert, information systems manager at Labor Ready in Tacoma, Wash., a supplier of temporary labor to the construction industry, said he is pleased with XcelleNet's Windows NT upgrade. Labor Ready wasn't a RemoteWare user but is beta-testing RemoteWare 3.1.

Gilbert said Labor Ready uses RemoteWare to transfer information among the corporate office and the branch offices, which have a network that comprises an NT server and several Windows 95 workstations. During a dial-up session, Labor Ready uses XcelleNet's middleware to transfer electronic mail and files, Gilbert said.

"We are a Windows NT shop, and now RemoteWare gives us secure remote computing capabilities," Gilbert said.

Karen Scherberger, an analyst at Gartner Group, Inc. in Stamford, Conn., said the addition of Windows NT capabilities to the product is important because "many users were asking for this Windows NT functionality" due to the growing popularity of Windows NT.

The product will be released in phases this year. RemoteWare 3.0, which includes basic communications, sessions automation, systems management and software distribution, is available now and costs $28,000 for 100 RemoteWare clients and a server that supports up to eight concurrent sessions.

RemoteWare 3.1, which will include a Lotus Development Corp. Notes Replication Agent to reduce replication time, is due later this quarter. Version 3.1 also will support a Microsoft Exchange Server Gateway that will let users send messages via Microsoft's Exchange messaging server. This version will support Windows NT 32-bit clients.

Scherberger said it is important that XcelleNet uses an underlying architecture — RemoteWare Queued Event Architecture — that supports multiple applications during one wireline or wireless session.

RemoteWare 3.0 includes two compression protocols: Transaction Pipe, which uses compression technology to beef up performance over low-speed wireless connections; and Message Queue, which moves Messaging Application Programming Interface-based messages with more speed.

Features of XcelleNet's RemoteWare middleware

Handles communications for wireless and wireline protocols and LAN environments, including the Internet

Supports MAPI, which allows third-party applications to run over RemoteWare without modification

Provides new applications agents – including Microsoft Exchange Server Gateway and Lotus Notes Replication Agent – that allow for the development of customized applications

Supports 32-bit Windows clients and is integrated with Microsoft's BackOffice

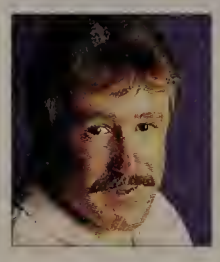
Commentary

Nothing but net

Exploring the thrill of NDS, the agony of ATM

By Bob Wallace

Beyond vaporware
You've seen products in vendor presentations that aren't even close to being generally available. Eric Hindin, an analyst at The Yankee Group in Boston, calls these promised offerings "slideware." And they're headed to a conference room near you.



How many people find their network operating system on the back of their hotel room card?

Frozen in place
Isn't it fitting that the 800-plus-member Asynchronous Transfer Mode (ATM) Forum announced at its latest meeting that it was freezing technical specifications? That meeting was held in Anchorage, Alaska.

Room service
How tough is it for Novell to market NetWare and its newly renamed Novell Directory Services (NDS)? Well, at the recent Networld/Interop '96 conference in Las Vegas, Novell foot the bill for door cards at the Flamingo Hilton hotel. The cards depict a network before and after NetWare 4.0 and NDS. But you have to ask yourself, how many people become interested in a network operating system after they see it on their room card? Then again, it could be worse. Carrier switch vendor StrataCom, Inc. had its logo and tagline printed on most cabbies' receipts.

The ISP generation
This from a network manager at a large utility company, who requested anonymity, on small Internet service providers (ISP): "These are the people who smoked pot in the 1960s, got big into bulletin board systems in the '80s and now sit around and watch the lights flash on the modem pools in their living room," the user said. "Anyone can be an ISP."

What's in a name?
Cabletron recently announced a product designed to bring LAN switching to Bay Networks' System 5000 hubs. But how many IS managers will feel comfortable telling their bosses they just bought a Bay-B-Huey?

A frozen rope
Although ATM technology has taken more of a beating than Mike Tyson's last three opponents combined, analysts still hold out hope for ATM to the

Nothing but net, *page 55*

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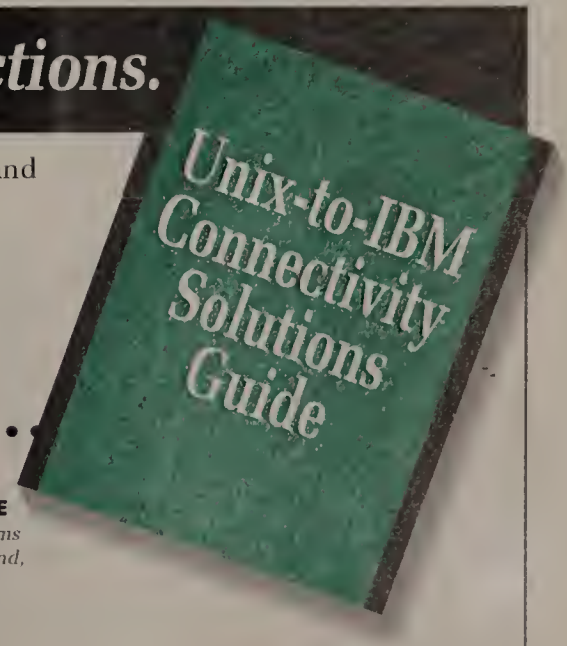

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- 65. Communications Systems/Public Utilities/Transportation
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- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development. Systems Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Mgt.

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- 13. Treasurer,Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
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K. 1– 9	❒	❒

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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
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19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
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51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❒	❒
B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
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Caching in for net performance gain

The following station cache tools can improve performance enough to delay expensive upgrades to stations or network connections

Vendor	Product	Price
Measurement Techniques Stoughton, Mass. (617) 344-6230 http://www.lancache.com	**Shared LAN Cache**	**$99** for client software for DOS, Windows 3.x, Windows for Workgroups and Windows 95; **$3,000** for optional server software to help workgroup
NetStream Pittsburgh (412) 276-9600 http://www.netstream.com	**NetGain**	**$80** for client software for Windows 3.x and Windows for Workgroups; **$124** optional SoftDock software, which lets users run cached programs
SunSoft Mountain View, Calif. (800) 786-7638 http://www.sun.com/sunsoft	**Solstice PC-Cache FS**	**$170** for PCs or SPARCstations that run Windows 3.x, Windows for Workgroups and Windows 95

Net managers throw cache at performance problems

By Patrick Dryden

When users complain about poor performance, some network managers turn to an emerging client cache technology that improves overall network performance by storing frequently requested programs locally.

Their tests show that caching applications and big support files on the PC station's hard disk drive significantly reduces server utilization, network traffic and response time.

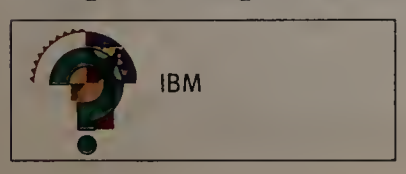
That means managers can put off upgrading hardware or seeking a bandwidth boost through segmentation, switching or a faster connection.

"Caching is an obvious boost to Windows station performance; my users wind up with faster access, and my network carries only data instead of all the big applications," said Paul Woike, technical services coordinator at Holyoke Mutual Insurance in Salem, Mass.

Quicker option

Woike said he experimented with 100M bit/sec. topologies and considered zippier PCs for users in the claims processing department. But he deferred pricey upgrades to evaluate Shared LAN Cache from Measurement Techniques, Inc. in Stoughton, Mass. With it, the time one Windows application required to switch screens plunged from 30 seconds to five seconds.

Shared LAN Cache, like other caching tools hitting the market right now (see chart), installs on client PCs to manage file requests from servers in the LAN or across a wide-area network link.



The station's disk storage provides a persistent cache space instead of memory, which empties each time a PC reboots or restarts. That means needed programs will still be available when users rejoin the network or start the next day.

Along with persistence, these tools offer users the independence to work with any network operating system, unlike some caching versions of Windows or new NetWare client software from Novell, Inc.

Cached programs won't run without a network connection, which Shared LAN Cache uses to verify that the latest version is present and to coordinate licensing with a network software meter, Woike said.

"Caching helps me answer complaints about slow loading from my users. When my users are happy, my boss is happy."

— Paul Woike, Holyoke Mutual Insurance

"Software remains under central control because Shared LAN Cache captures part of each hard disk drive for the network," according to John Dubiel, manager of planning and technology at Boston Edison Co. Test stations at the Boston utility loaded programs at least 50% faster, he said.

Marty McCafferty, network administrator at Harper College in Palatine, Ill., wants to cache necessary files on each classroom station "to halt saturation of the network when students all start applications at the same time." Businesses experience a similar situation when workers load Windows and application suite from their local server every morning. McCafferty discovered another benefit to local caching while he was testing NetGain from NetStream, Inc. in Pittsburgh.

A slow parallel-port network interface rendered McCafferty's notebook computer "unusable" for running Windows and applications from the server, until he replicated the files locally with NetGain.

Improved access

Software developer Emprise Technologies, Inc. in Bridgeville, Pa., saw positive results while testing NetGain, but the company needs a version for Windows NT. None of the cache tool vendors supports NT stations yet, but ports are promised for this year.

"We have been analyzing switches and Fast Ethernet, but a product like this can help us defer such upgrades," said Jeff Schultise, IS vice president at Emprise.

Two beta testers of Solstice PC-Cache FS from SunSoft, Inc. in Mountain View, Calif., reported improved access to network file system (NFS) servers. But the tool's price exceeds its benefits, they said.

"If this tool wasn't so pricey, I'd want to use it on all stations to help NFS transfers," said Ed Sinamark, information technology manager at Summa Four, Inc. in Manchester, N.H.

Nothing but net

CONTINUED FROM PAGE 53

desktop at 25M bit/sec. Mary Petrosky, an analyst at The Burton Group in Salt Lake City, predicts vendors this year will ship more ATM ports at 25M bit/sec. than at any other speed.

Keep your checkbook in sight at all times

Marketing phrase of the week from Cisco's home office in San Jose, Calif. "Moving from legacy to luxury bandwidth." Let's hope users can afford it.

Taste grates, less thrilling

Isn't it frightening how ads about technical networking have found their way to sports broadcasts? Who wants to be the one who tries to explain switching and routing to the gang during the final minute of college basketball's national championship or sudden death overtime in a hockey playoff game?

Why ask why?

Are business networking needs driving ATM deployment? A user presenting at a recent networking conference, on the reason his company built a sprawling ATM network: "We decided to do it over beers in Orlando." He went on to thank equipment vendors and carriers that provided the free gear and lines needed to build the network.

Wallace is *Computerworld*'s senior editor, internetworking.

Briefs

Cardinal preps ISDN cards

Cardinal Technologies, Inc. in Lancaster, Pa., is preparing the IDC0100I line of internal Integrated Services Digital Network (ISDN) cards; early test units will be available in the next few weeks. The firm's first ISDN product is slated to ship by the end of June for $199. Throughput for the cards is expected to be 128K bit/sec.

HP boosts OpenView

Hewlett-Packard Co. this week will help telecommunications managers keep sane while they are finding and fixing problems on their complex networks. New Event Correlation Services (ECS) for HP's OpenView network management platform specifically addresses the management of telecommunications networks. But ECS is generic enough to be applied in the future to managing distributed internetworking gear and client/server systems, an HP official said. ECS should ship in June; pricing will start at $8,000. ECS works with OpenView Distributed Management, HP's telecommunications network management software; pricing for that software starts at $10,000.

Kit speeds operating systems upgrades

Simware, Inc. in Ottawa, Ontario, has enhanced its REXXware Migration Tool Kit (RMT). RMT now gives users faster Novell, Inc. NetWare 3.x to NetWare 4.1 migration features. RMT 1.50 includes an Express File Migration capability that will let network managers use existing tape backup solutions to quickly migrate NetWare 3.x files to 4.1 volumes. The new Checkpoint Restart feature increases reliability. If a file migration process is halted because of a network outage, Checkpoint Restart will pick up the migration from where it left off with no loss of data. RMT 1.50 also has an Undo Previous Migration feature that will let network managers reset the NetWare 4.1 database and back out of a migration. RMT 1.50 is shipping now. Pricing starts at $795.

LANalyzer adds troubleshooting power

The basic troubleshooting software in almost every NetWare network administrator's tool kit has advanced several notches. Novell upgraded LANalyzer for Windows, monitoring and protocol decoding software, to perform better and help decipher problems with NetWare Directory Services (NDS). Version 2.2 of LANalyzer for Windows now supports 32-bit network client software and Windows 95 multitasking. That means it approaches the performance of hardware-based analyzers at a fraction of the cost — $1,495 plus a PC, compared with more than $12,000 for popular self-contained models.

New Products

Radnet, Inc. has introduced WebShare, groupware designed to take advantage of World Wide Web technology.

According to the Cambridge, Mass., company, WebShare will allow users to access groupware applications from a Web browser.

WebShare groupware comprises WebShare Server and WebShare Designer.

WebShare Server is a groupware engine that stores the groupware application's views of information, fields, forms, scripts and all data about the application's state to manage its functionality.

WebShare Designer is a visual design tool that lets developers build custom groupware applications and define workflow parameters.

Pricing for the server license starts at $1,495 per server.

WebShare Designer licenses start at $695 per developer seat.

▶ *Radnet*
(617) 577-9422

DataTrax Systems Corp. has introduced Foreseer, a Windows 95-based, client/server application for managing foundation equipment.

According to the Louisville, Colo., company, Foreseer can monitor and manage all foundation equipment, including uninterruptible power supplies, batteries and alarms.

It provides configurable software tools to predict and prevent system failure.

The Foreseer client provides access to the data stored in the DataTrax server, which lets users customize their views to choose configurations.

Alarms will notify designated personnel when a problem arises.

Pricing for the Foreseer client starts at $3,995.

▶ *DataTrax Systems*
(303) 655-1030

Executive Software International, Inc. has introduced Diskeeper 1.04 for Windows NT, defragmentation software.

Diskeeper 1.04 for Windows NT was designed for multiuser networks in which files are continually accessed, edited, extended and rewritten.

According to the Glendale, Calif., company, Diskeeper 1.04 for Windows NT eliminates disk fragmentation while online disks are being accessed.

Critical applications, including Internet servers, databases and mail servers, can be updated without taking them off-line.

Diskeeper 4.01 for Windows NT works with Microsoft Corp.'s BackOffice.

The product costs $125 for Windows NT Workstation and $399 for Windows NT Server.

▶ *Executive Software International*
(818) 547-2050

Computone Corp. has announced IntelliServer PowerRack, a high-performance communications server for remote access.

According to the Roswell, Ga., company, IntelliServer PowerRack combines the functionality of a terminal server with the extended communications capabilities of a remote access server and an Internet access device.

It connects directly to an Ethernet LAN, supports TCP/IP networking protocols and includes security and configuration features.

IntelliServer PowerRack has 16 serial ports and can be expanded with up to three additional 16-port modules.

It is powered by a Mips Technologies, Inc. R3000-compatible, 32-bit RISC CPU. Thinnet Ethernet and attachment unit interface connections are provided.

Pricing for IntelliServer PowerRack starts at $2,595.

▶ *Computone*
(770) 475-2725

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- Improve customer service and interaction with their customers
- Deliver more current information than their competitors
- Increase response time, improve costs, and speed up information delivery

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Well, with all respect to the status quo, IBM now unveils the new 25Mbps ATM Workgroup Solution. It comes complete with workstation adapters, giving you an immediate boost in bandwidth, with plenty of room to grow in the future. And it all comes at the refreshingly low price of $495 per connection.

So why just dream about getting an affordable ATM solution when you can install one today? See your nearest IBM reseller or call us at 1 800 IBM-2468, ext. DA130, to learn more. Or, if you prefer, you can visit our Web site at www.raleigh.ibm.com/netad.html for all of the details. We have lots of information to share. And the good news is, we can get it to you fast.

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Adobe Systems makes move to Web-top development, **63**

The Internet

BIG IRON cast onto the Web

System/390 package adds cruise control

By Michael Goldberg

Now that IBM has pledged to make System/390 links to the World Wide Web easier, early users and analysts said the mainframes should be a decent all-terrain vehicle for navigating security traps in the Internet jungle.

By necessity, early World Wide Web entrants among System/390 users had to be innovators, plugging gaps in connectivity with their own software code. IBM is now offering the BonusPak, a package of software tools, guides on how to hook up to the Internet and sample Web home pages. The package is available at no charge to System/390 users who have the OS/390 operating environment or Version 5.2.2 of the MVS operating system.

The features allow Web browsers to access information on mainframes using the CICS transaction processing monitor, for example. Later this year, IBM will deliver a version of OS/390 that supports Internet security protocols such as Secure Hypertext and Secure Sockets [CW, Feb. 26]. These features come as welcome news to users who have made Web servers out of mainframes because of ease-of-use and security concerns.

The Holiday Inn Worldwide hotel chain cobbled together its own System/390 applications and hardware to bring an online reservation system to the Web last June using three mainframes, including one set aside as a firewall layer to protect corporate data from Web intruders.

IBM's new Web tools "will make it a lot better for us because we can concen-

IBM, *page 64*

Mainframes get help speaking Internet

By Kim S. Nash

Using a terminal isn't, well, terminal. You, too, can get Webbed.

The World Wide Web isn't off-limits to the estimated 4 million users of mainframe and minicomputer terminals worldwide. A handful of new products was unveiled recently to help such users make the cybertrip.

Ottawa-based Simware, Inc., for example, plans this week to ship Salvo Server [CW, Feb. 5]. When used with Salvo Personal Edition, the server portion lets a Web browser, such as Netscape Communications Corp.'s Navigator, emulate a 3270 terminal in one window within the browser.

Salvo Server 2.0, which is due to ship in July, will support 5250 terminals and links to relational databases.

Idea Corp. in Bedford, Mass., began shipping a package late last month designed to let terminal users access the Web through a character-based interface. The Internet Terminal Server also lets such users send and receive electronic mail via the Internet.

And IBM is also expected to roll out Web/terminal translators in the next few months, according to Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn.

"It's an idea whose time has come," said Dan Ashley, director of administrative computing and telecommunications at California State University in San Bernardino.

Web/terminal translators

COMPANY	PRODUCT	PRICE
Idea Bedford, Mass.	Internet Terminal Server	$3,980 for 16 users
Simware Ottawa	Salvo 2.0	$3,950 for 10 users
Teubner & Associates Stillwater, Okla.	Corridor	$2,750 for 15 users

Ashley said the college has been scouting for more than a year for packages that let terminal users take part in intranets, or applications that make internal use of the public Internet.

Salvo will be part of a project to connect all departments at the California college this year via an intranet available to faculty and students, Ashley said.

Jim Rawlings, a technical specialist at the Bank of Montreal in Toronto, said he hopes Salvo can eliminate the need for both a terminal and a PC on his desk. He said he hasn't decided yet whether to buy the product but added, "I like what I've seen so far" of early versions.

Teubner & Associates, Inc. recently shipped a Web/terminal product of its own (see chart). The Stillwater, Okla.-based vendor estimates that the market for such packages is $900 million, in part because the majority of corporate data resides on mainframes and is accessed by terminals.

http:

Computer boutiques

The Web wonderland of virtual stores for hardware, software and networking products can be confusing. Pay attention to payment policies; policies for accepting credit-card information online differ widely.

Although online department stores that sell all kinds of computer products are going strong, several boutiques have popped up that target specific segments. Here are a few sites to get you started.

At **http://db.hotlinx.com**, users can get product information and links to online stores related specifically to client/server and database software. Categories include data warehousing and application development. The site also offers links to articles and news reports about relevant products.

Black Tower Computers, at **http://www.blacktower.com**, offers tons of hardware – complete systems, printers, add-in cards and peripherals of all sorts. The virtual store claims to offer low prices because it keeps little inventory on hand and can take advantage of sudden price drops.

FedCenter caters to federal agencies. It doesn't sell products but provides detailed information about vendors that do. It is organized using style and terms familiar to government workers. The Windows 95 Resource Center is particularly helpful. See **http://www.fedcenter.com.**

Apple products are the specialty of the Franklin & Marshall Computer Store. Users can buy products here and contract for service or repairs. Several links to other Apple-specific sites can be found as well at **http://www.fandm.edu/Departments/Computing-Center/ComputerStore/ComputerStore.html.**

– Kim S. Nash

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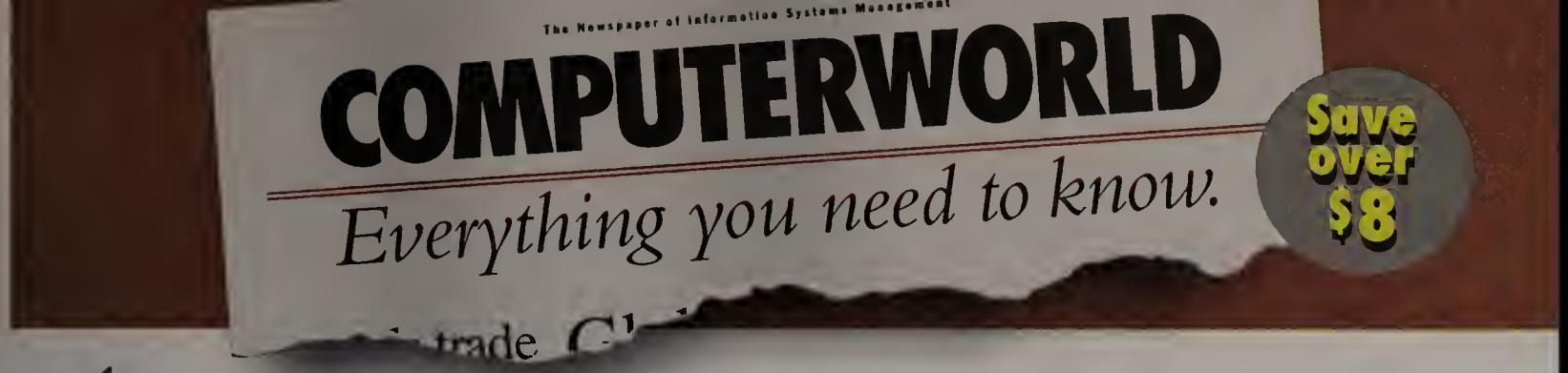

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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Networking Products ❒ Yes ❒ No

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G. 50 – 99	❒	❒
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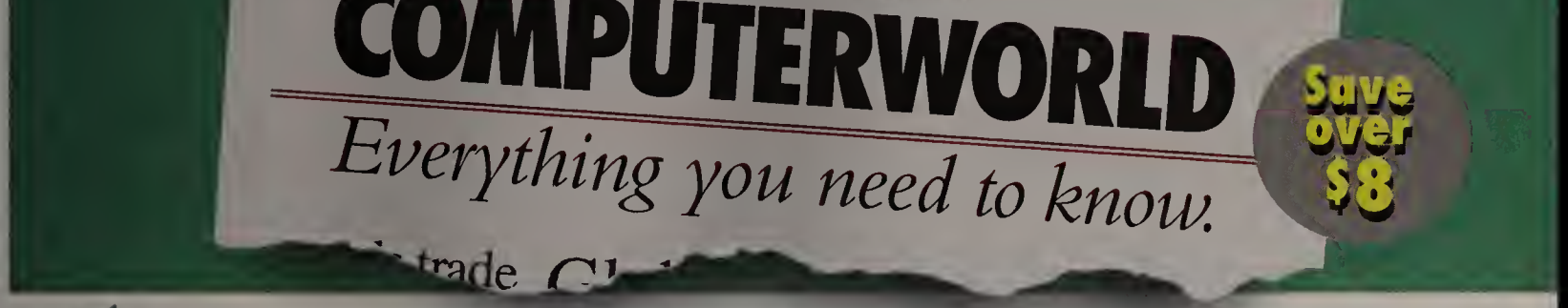

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65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
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23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
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12. Vice President, Asst. VP
13. Treasurer,Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

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	1. At this location	2. Entire Organization
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H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1– 9	❒	❒

B456 6

New Products

Distinct Corp. rolled out NetRover, a set of Internet utilities for mobile computing.

According to the Saratoga, Calif., company, NetRover lets users transfer files between two remote systems. It includes a 16- or 32-bit file transfer protocol client that has a Windows 95 look and feel, single-click profiles and firewall support.

NetRover also has Multipurpose Internet Mail Extension support with viewers for popular file types. It includes rapid mailing of encoded attachments for sending large attachments with electronic mail.

NetRover costs $99. More product information is available at Distinct's home page at http://www.distinct.com.

▶ *Distinct*
(408) 366-8933

Zenith Data Systems has introduced Z-Server Workgroup Web Server, a hardware and software product bundle.

According to the Buffalo Grove, Ill., company, Z-Server Workgroup Web Server lets users set up, manage and publish hypermedia information on the Internet and corporate networks. It includes a 120-MHz Intel Corp. Pentium processor, a four-speed SCSI CD-ROM, a Peripheral Component Interconnect Ethernet controller and Netscape Communications Corp.'s Fast Track Server software.

Pricing for Z-Server Workgroup Web Server starts at $4,799.

▶ *Zenith Data Systems*
(708) 808-5000

20/20 Software, Inc. has introduced Net-Install.

According to the Portland, Ore., company, Net-Install sets up and distributes software and data files through the World Wide Web. It lets users of Netscape Communications Corp. Navigator click a button on a Web page to automatically download software. It adds icons to the desktop and, by determining the type of computer requesting the software, transfers and installs only those files that are appropriate for the machine.

Net-Install was designed to let publishers distribute software quickly and accurately with customized graphics, titles and messages.

The Net-Install plug-in file is free for end users. The Publisher's tool kit costs $149. More information is available at 20/20 Software's home page at http://www.twenty.com.

▶ *20/20 Software*
(503) 520-0504

Hummingbird Communications Ltd. has rolled out Columbus 1.0.

According to the North York, Ontario, company, Columbus 1.0 is an application that gives users access to organizational networks and the Internet. It combines a range of protocols and Internet tools including a World Wide Web browser, electronic mail, file transfer protocol applications, an activity manager and scheduler and built-in indexing. It also includes Telnet and News Reader clients and an application to organize the resources accessed with them.

Columbus 1.0 was designed to let users share directories, files and documents without degrading network security.

The product is available free at Hummingbird's home page at http://www.hummingbird.com.

▶ *Hummingbird Communications*
(416) 496-2200

Mainframe links gain in popularity

By Mitch Wagner

The Internet, like the smiley-face button in the early 1970s, is everywhere. It can't be avoided. Teen lovers on sitcoms urge each other to send E-mail when they are apart. Internet addresses are posted on TV commercials and highway billboards.

The Internet is even turning up on NetWare LANs and IBM mainframes.

At Internet World in San Jose, Calif., earlier this month, Novell, Inc. announced its InnerWeb Publisher, a World Wide Web server with development tools designed to help information systems managers build and deploy intranet Web sites. The software set is built around Novell's NetServer 2.5, which runs on top of a NetWare LAN server. It will let IS managers use a single machine as LAN server and Web server.

The kit also includes Version 2.01 of Netscape Communications Corp.'s Navigator Web browser; SoftQuad, Inc.'s HotMetal Light tool for designing Web pages; and IWare Lite from Quarterdeck Corp., which allows NetWare users to access the Internet without installing TCP/IP on each PC.

TCP/IP is the networking protocol software that carries Internet information. The software will be available next month, priced at $2,495.

Also at the show, IBM announced the OS/390 Internet BonusPak, a free package designed to turn a System/390 mainframe into an Internet server. It includes installation utilities, information guides and 300 sample home pages in five languages.

Why use a multimillion-dollar mainframe as a Web server when a simple PC can do the job?

Many IS managers who use the Internet for electronic commerce are connecting Internet sites to databases that run on IBM mainframes. According to IBM, it makes sense for them to run the Web server on the same machine. The System/390 will be able to run Java code by the end of this year or early next year, according to IBM (see story page 61).

Aficionados

Companies that run Web servers on IBM mainframes include the following: American Airlines, Harvard University and Holiday Inn Worldwide.

Also at Internet World, Microsoft Corp. announced it is moving its news offerings off its proprietary Microsoft Network online service and on to the Web, effective immediately. Microsoft said it expects to move entirely off the proprietary software base by the end of the year.

Apple Computer, Inc. and Netscape Communications Corp. jointly announced that Netscape will bundle a QuickTime movie plug-in with Navigator 3.0, available now in test versions and expected for general availability next month.

The software will allow users to view digital movies in the popular QuickTime format as part of any Web page. Right now, QuickTime movies require a separate application that runs in a separate window.

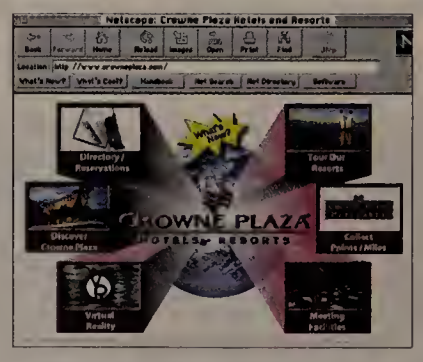
IBM supports Web navigation

CONTINUED FROM PAGE 61

trate on what our application needs to be instead of how we're going to build it," said Dennis Erskine, vice president of applications and system development.

Erskine said his Atlanta-based firm chose the System/390 to support its Web presence because it is a more mature and stable — and therefore more secure — environment than Unix.

The security concerns of corporate users looking at the Web have some merit, analysts said. But the mainframe neighborhood is a sedate suburban setting compared with Unix.



Holiday Inn and Crowne Plaza
hotels feature online reservations

For example, System/390 users can set aside a portion of their systems as Web servers without jeopardizing other segments of their system, said Ed Carr, an analyst at Boston-based Aberdeen Group, Inc. Carr said mainframe shops that delay Internet commerce projects because of security concerns could lose out on a business opportunity.

American Airlines, a division of AMR Corp., was able to leverage the know-how of its Sabre IS group to build a Web site that offers flight and fare information from its System/390 Web server, said John Samuel, managing director for distribution planning.

Samuel said it was less complicated for American to set up a Web server using its existing mainframes than it would have been to add layers of hardware.

Now the Dallas-based company is looking to develop relationships with individual customers over the Internet. "What if you've got relatives in Pittsburgh, and we'll send you an E-mail if the price to Pittburgh drops below $250? Folks are very interested in that," he said.

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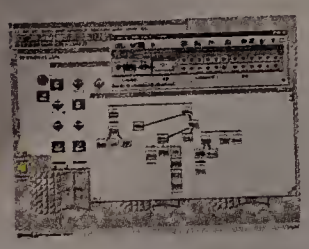

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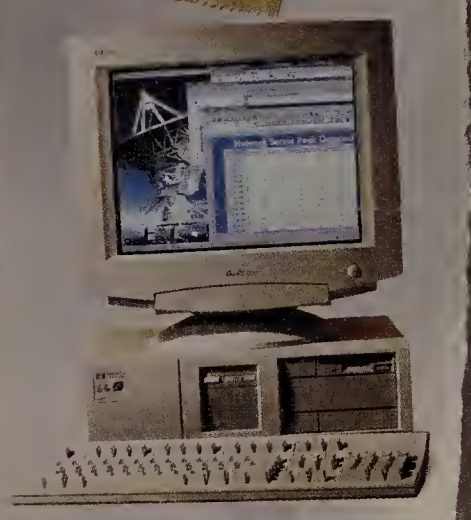

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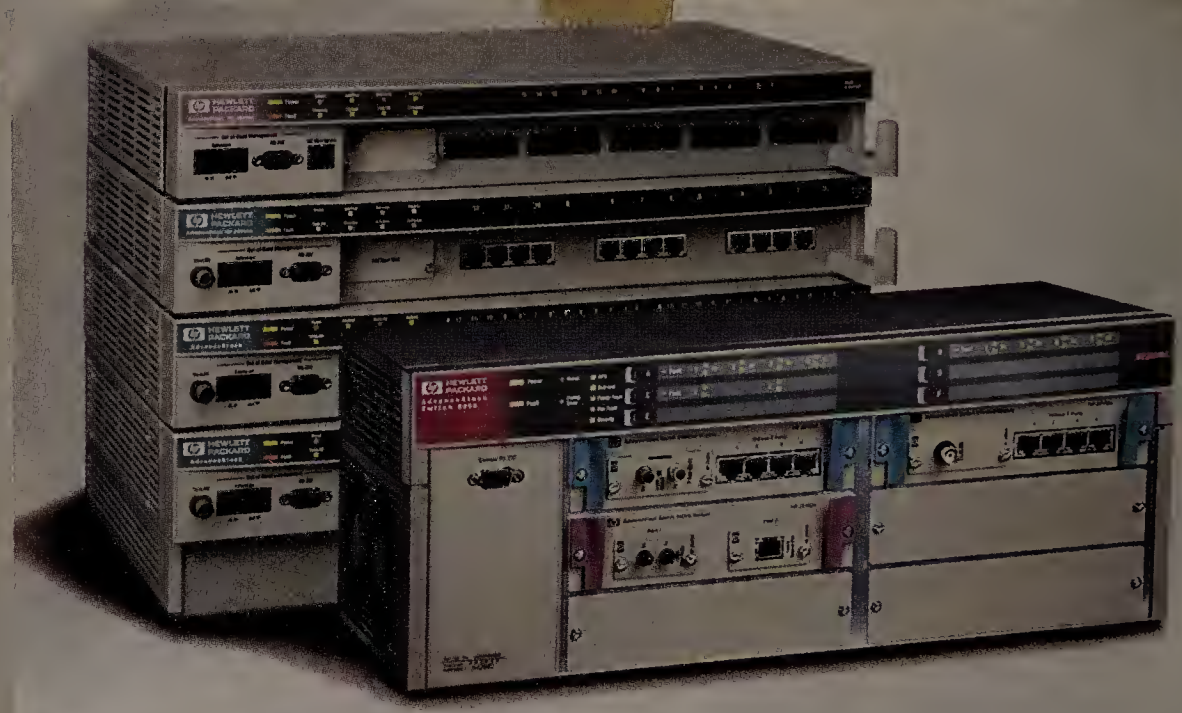

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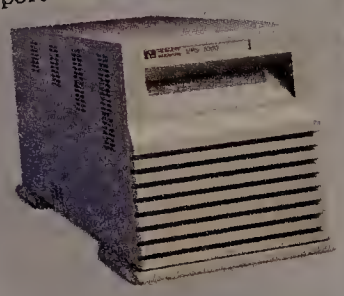

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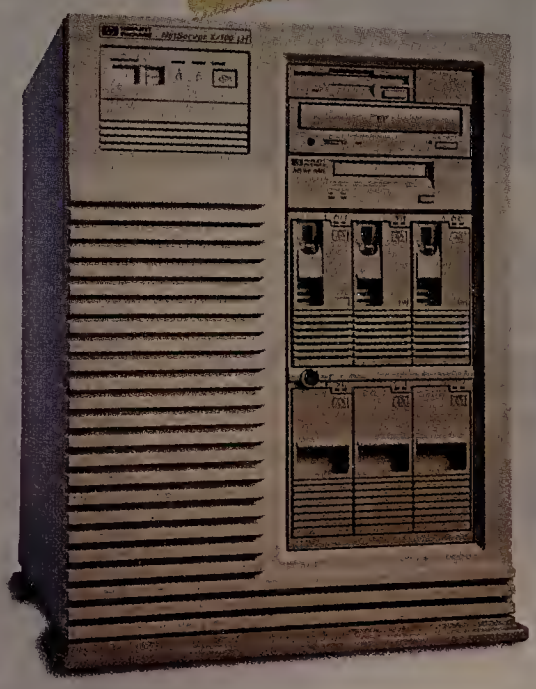

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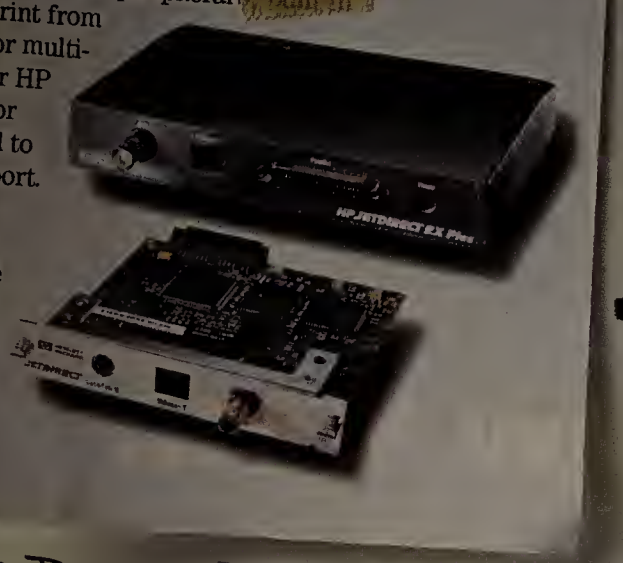

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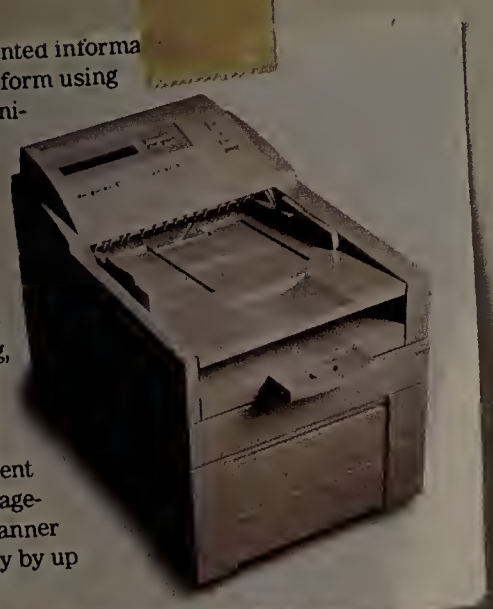

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fact: One out of six attendees at PC EXPO '95 came from companies with more than 10,000 employees. More than one in four were with companies employing over 2,500 people.

fact: 95% of attendees at PC EXPO '95 visited at least one of its seven technology Pavilions. 78% visited at least three. PC EXPO '96 will feature:

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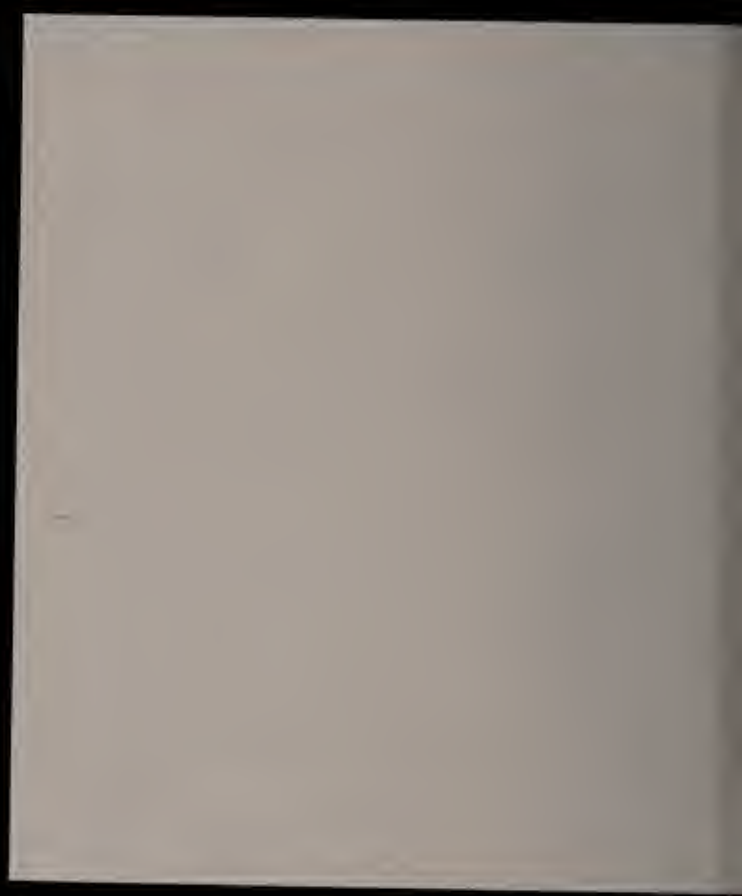

Michigan bank's customer service gets boost from IBM OS/2 Warp Server, **72**

Corporate Strategies

'net's worth

Optimism reigns among some companies tackling Internet commerce

By Thomas Hoffman

Having trouble cost-justifying an Internet-based electronic commerce project? Consider these signs of success:

• **Banc One Corp.** in Columbus, Ohio, invested several hundred thousand dollars last year to support an electronic data interchange-based service that corporate and academic libraries use to order publications (http://www.rowe.com).

As the automated clearinghouse for the service, Banc One expects to bring in enough transaction revenue to break even this year and "make a few million dollars in the near future," said Steve Dieringer, group product manager of electronic services at the bank.

• **Warner Bros. Online**, which launched its World Wide Web site last fall (http://www.warnerbros.com), invested "tens of millions of dollars" for all the necessary hardware, software and manpower to support Internet-based product sales from its Warner Bros. Studio Store, said James A. Banister, vice president of production and technology at the Burbank, Calif.-based firm. Banister said he expects the venture to become profitable by year's end.

• **United Video Satellite Group**, which provides the Prevue channel on cable television, recently launched an Internet service that replaces fax-based communications with 3,000 cable network affiliates to post their pay-per-view events. It took United Video just one week to develop the system, said Brian Boyd, director of Internet services at the Tulsa, Okla.-based firm. Because the Internet infrastructure was already in place, company officials expect United Video to recoup its project investment through labor and other cost savings within 12 months.

United Video's Brian Boyd *says the company expects to recoup its Internet investment within one year*

Returns are real

Industry gurus back these claims. Gay Slesinger, an analyst at Giga Information Group in Cambridge, Mass., said Sun Microsystems, Inc. had $12 million in product sales via the Internet last year and saved $1 million in customer support costs.

Despite fears that Internet-based electronic commerce isn't secure, it is already a lucrative industry — and one that is expected to take off. The value of goods and services sold over the Internet last year was placed at $72 million, Slesinger said. The market could reach $200 billion by the year 2000 and $1 trillion by 2010, she added.

But even the early winners are complaining about ongoing technical challenges. Because busy signals are so common to end users attempting to access the Web, the Internet "won't be a good distribution network" for widespread sales of products and services until it achieves the same kind of reliability available with television programming, Banister said.

Banister said he doesn't expect the Internet to reach that kind of reliability for another two to five years.

Warner Bros. Online's *investment in 'net-based sales should pay off by year's end, says James A. Banister, vice president of production and technology*

Seekers of reusable code can now pull it from Web

By Gary H. Anthes

If you are looking for a mathematical routine, sort algorithm, general ledger package or database system that will save you from reinventing the wheel, you can now surf the Web for it.

The Reuse Library Interoperability Group (RIG) in Arlington, Va., has developed "bindings" that will let users in different organizations link software reuse libraries and exchange software via the Internet's World Wide Web. The bindings in essence provide standards for conveying information about software assets to and from the Web.

Software assets can include source-code routines, commercial packages, documentation, specifications or test suites.

"The World Wide Web is becoming the vehicle of choice" for locating and exchanging reusable software, said Tim Niesen, a senior engineer at Raytheon Co. in Lexington, Mass. He said Raytheon will use the bindings to exchange software assets with external parties over the Internet and among Raytheon subsidiaries over an intranet.

That will make any Web site potentially part of a huge "virtual software reuse library" that offers disparate users the same look and feel, Niesen said.

He said requests for proposals increasingly include demands that bidders guarantee certain reuse levels, which can be as high as 90%. The reusable components specified include code, tools and commercial packages such as database management systems.

"Those that fail to reuse could be locked out of future business," he said. "The customer doesn't want you to design things from scratch anymore."

The bindings work on top of the language- and environment-independent Basic Interoperability Data Model (BIDM) developed earlier by RIG. The BIDM defines a minimum set of information about software assets that libraries need to exchange to support interoperability. RIG bindings tailor that information for the Standard Generalized Markup Language and the Hypertext Markup Language on which the Web is based.

"In the past, reusable assets have often been trapped within an organization because of cultural differences in library organization and because of lack of connectivity between libraries," said Jim Moore, chairman of the RIG Executive Board. "The Web has provided the connectivity, and the RIG efforts are providing a uniform method of access."

Moore said software reuse libraries have been used mostly for scientific and engineering applications but are beginning to be used for commercial applications. For example, he said there are several libraries of Microsoft Corp. Visual Basic programs available for use as building blocks in commercial applications.

Re-reuse is the payoff

The U.S. General Accounting Office reports that it costs 20% to 55% more to develop reusable software and that savings from reuse won't be achieved unless a component is reused at least three times.

Info site

More information about the Web bindings and demonstrations of early test implementations are available on the Internet at http://www.rig.org/TC7.html.

Reusable software components:

- Code
- Documentation
- Software requirements
- Designs and architectures
- Test data and plans
- Software tools

Source: U.S. General Accounting Office, Washington

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COMPUTING

Bank's customer service boosted with OS/2 Warp

By Laura DiDio

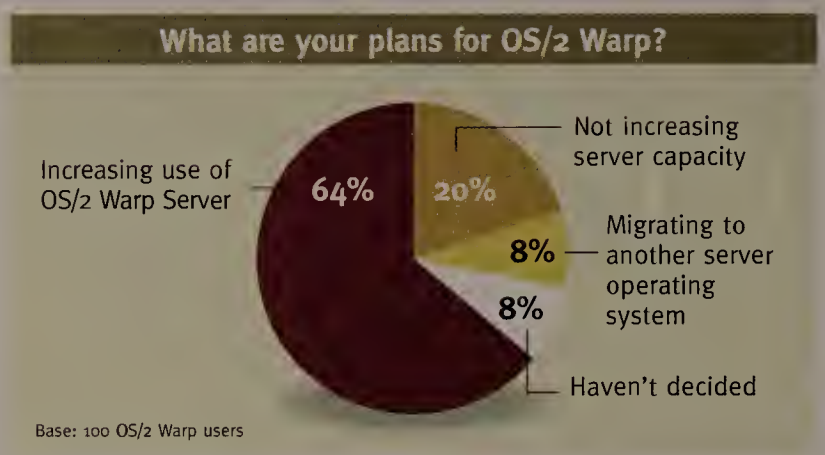
Comerica, Inc. banks on IBM's OS/2 Warp to deliver scalability, multitasking and high reliability to its tellers and customer service representatives at branches throughout Michigan.

But Comerica's biggest payoff from its OS/2 Warp and Warp Server deployment has been extra time to devote to customers.

The overall reliability of OS/2 Warp Server and OS/2 Warp have allowed Comerica's network administrators to assume a proactive development stance rather than a reactive "fix-it" stance, according to Ken Milczynski, vice president and business area manager for Comerica's Branch Systems Development Technologies. "That gives hours more time to spend with our end users and lets our end users spend more time with the bank's customers," Milczynski said.

Milczynski said the Detroit-based financial holding company — an IBM shop since the 1970s — opted to upgrade its older IBM OS/2 operating system to OS/2 Warp Server and OS/2 Warp in its corporate and branch offices.

This is a trend mirrored by much of IBM's installed base — particularly in the financial and accounting industries, according to a recent OS/2 Warp White Paper released by International Data Corp. (IDC), a research firm in Framingham, Mass. A survey of 100 IBM OS/2 Warp and Warp Server users found that "97% were satisfied with OS/2 Warp, 71% said they were very satisfied, and two-thirds will increase OS/2 Warp usage," IDC analyst Lee Doyle said.



Source: International Data Corp., Framingham, Mass.

Reliability rules

A key reason for Comerica's satisfaction and increased deployment of OS/2 Warp and Warp Server is high reliability, according to Milczynski.

Reliability — as in 100% uptime — is paramount to Comerica's 4,000 employees in its 280 branch offices and its 31 ComeriMart branches, which are located in grocery stores. For the ComeriMart sites, Comerica relies on OS/2 Warp Server's Personally Safe and Sound, a backup and recovery service integrated into the core network operating system. This feature lets users dedicate one of the OS/2 Warp Servers as the backup server.

Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston, noted that OS/2 Warp Server gives businesses such as Comerica preemptive multitasking to better process concurrent tasks and further enhance reliability. "You don't have to reboot the entire system if one application crashes," Sakakeeny said.

Another factor was that pilot tests of OS/2 Warp found it uses "about 25% less memory than prior versions of OS/2, and it's well able to accommodate multitasking applications," Milczynski noted. The new integrated speech-enabled functions in Merlin — the code name for the next version of OS/2 due out this summer — "may also be very appealing to our users in the future," he said.

IBM's extensive technical support was also a key factor in Comerica's decision to upgrade to the OS/2 Warp server and operating system platforms. Milczynski said he and his fellow network administrators are able to directly call the OS/2 Warp engineers at IBM's laboratories in Boca Raton, Fla.

"I'd say that's exactly the kind of return on investment we're looking for," Milczynski said.

Briefs

Free upsizing tools

Microsoft Corp. is making available at no charge Access Upsizing Tools for Windows 95. Microsoft said the tools let developers move applications, with only minimal changes, from the Access desktop database management system to Microsoft SQL Server, a client/server DBMS. The tools can be downloaded from http://www.microsoft.com/msaccess.

Comdisco plans European center, upgrades asset management app

Comdisco, Inc. teamed with **Deutsche Telekom** in Germany to create what they claim will be the largest, most comprehensive disaster recovery facility in Europe. The facility, which will include more than 1,000 MIPS of mainframe processing power and midrange, network and desktop support, will open in the third quarter. Separately, Comdisco introduced Class Version 4.3, an enhanced version of its asset management software tool. New enhancements include integration with Microsoft's Systems Management Server software for managing networked PCs, support for Sybase, Inc. relational databases and an improved electronic data interchange interface.

401(k)s at your fingertips

Portfolio Accounting World Wide in Jersey City, N.J., launched what it claims is the first Internet-based mutual fund trading system. The system, called Path Online (http://pawws.com/jwc), was created for Jack White & Co. in San Diego. Investors can access thousands of mutual funds from Jack White's Mutual Fund network.

IBM joins companies offering SAP backup

By Thomas Hoffman
STERLING FOREST, N.Y.

IBM's Business Recovery Services unit has quietly rolled out backup services for two fast-growing markets — SAP AG's R/2 and R/3 software and IBM's SP2 parallel processing systems, *Computerworld* has learned.

"There is definitely growing interest in SAP" backup services, especially among pharmaceutical companies, said Robert Cassiliano, chairman of the Uninterruptible Uptime Users Group, a New York-based user group dedicated to computer reliability.

Disaster services

Meanwhile, IBM has signed up more than a dozen SP2 customers since launching that backup service in February, said John Nevola, site manager at the IBM disaster recovery facility here.

Join the crowd

IBM isn't alone or the first to go after the new markets.

Sungard Recovery Services, Inc. established an SAP practice in January for mainframe R/2 customers and for those who are moving to SAP's distributed R/3 environment, said Michael F. Mulholland, president and CEO of Sungard in Wayne, Pa.

Sungard last month acquired Digital Equipment Corp.'s North American recovery services business for an undisclosed amount of cash. The U.S. business recovery market is growing at an 11% annual clip, according to International Data Corp. (IDC) in Framingham, Mass.

Comdisco Disaster Recovery Services, Inc. introduced SAP backup and consulting services nearly two years ago and has since signed up 20 customers, said Terry Shaughnessy, a product manager at the Rosemont, Ill., company.

Most SAP users are focusing on installation right now, with scant attention being paid to recovering those systems in a disaster, Nevola said. But the potential market for SAP services is huge because the software can be used to run the bulk of a company's mission-critical operations. The SAP software market is growing at a 25% to 30% rate, IDC analyst Tim Bourgeois said.

Satellites beam info to British rail riders

By Niall McKay

British Rail is famous for its excuses — the U.K.'s national railway once claimed that trains were delayed in the autumn because leaves had hindered their passage. Now, the company has installed the latest in satellite technology to keep travelers informed of mishaps.

British Rail Systems Ltd. is rolling out its Train Positioning and Tracking (TPT) system, which uses the satellite-based Global Positioning System to pinpoint the exact location of its trains.

"A signal is beamed from the roof of the train to a satellite at 15-second intervals," said Ray State, head of research and development at British Rail Systems. "The signal is then relayed to the base station, which calculates its position and relays it back to the train."

Once the location is established, an on-board PC calculates the distance between it and the next station and the train's estimated time of arrival. The information will be displayed to passengers and relayed to electronic notice boards displayed at stations down the line.

Until now, the only way to determine the position of a train was through an antiquated signaling system. Signal stations placed at intervals along a rail track relayed information about the passage of a train to the next station but provided no information on a train's location between signals.

"We hope to extend the capabilities of TPT so that it will be possible to provide customers with train connection information," State said. "Eventually we hope to provide customers with guided tours of landmarks as they pass them, especially on some of the more scenic routes."

McKay is a writer for the London bureau of the IDG News Service.

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Weirdos
How to manage your quirky geniuses, page 81

June calendar, page 84

Managing

Is supporting road warriors and telecommuters bumming you out? You could cut back on those high-stress moments if you just . . .

ROBERT NEUBECKER

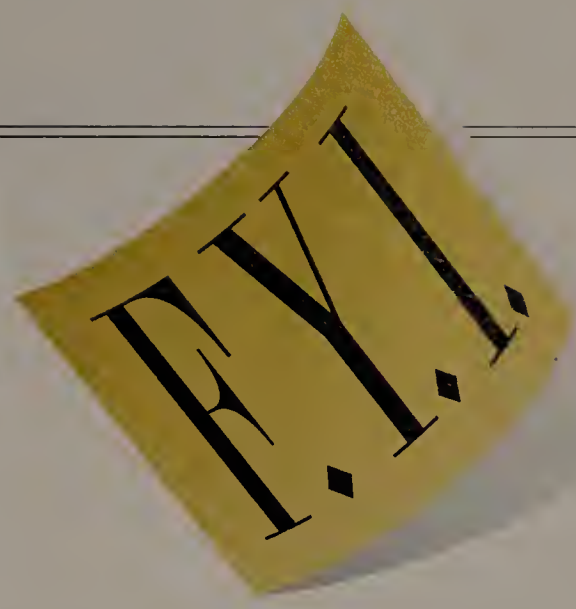
By Joseph Maglitta

HISTORY MAY REMEMBER 1996 AS THE YEAR THAT TELEWORK REALLY GOT WORKING. A brutal winter, the Summer Olympics and growing armies of road warriors will send record numbers of workers out of IS sight but not out of mind.

Indeed, technical support of teleworkers — the current buzzword for home-based and traveling users — "is a formidable information systems challenge," notes Gil Gordon, a consultant in Monmouth, N.J. The latest twist involves a surge of ad hoc, after-hours teleworkers whom analysts at Forrester Research, Inc. call "white-collar workhorses."

But hold on. Some IS managers and consultants are fighting this mounting complexity with a simple countertactic: simplicity. This tactic may not work in every situation, but it suggests a mind-set that many IS managers can benefit from.

Think simple, *page 80*



Interop.com: Work in progress

Interop.com (http://www.interop.com) bills itself as a virtual community in which networking professionals can find product information and reviews, chat with their peers and make purchases. First, I must disclose that the site was developed by Softbank Exposition and Conference Co., a competitor to *Computerworld*'s parent company, International Data Group. Having said that, this "virtual community" is still a Potemkin village that delivers few of its promises.

Clicking on "Interop Directory," for example, delivers a database of company names, addresses, phone numbers and detailed specifications of their products, such as routers, hubs and switches. So far, so good, but nothing I can't get by using a search engine to find those vendors' World Wide Web sites.

Interop.com claims to be a comprehensive resource, but its company database includes only vendors exhibiting at the Networld/Interop '96 show, which Softbank runs. Softbank's initial plans are to update the site only after each show, which means it could be as much as two months out of date. Softbank may open the directory to other vendors, but plans are still unclear.

Product reviews won't be available until sometime in the next month or two. The ability to purchase online, scheduled to be provided by Insight Direct, Inc. in Tempe, Ariz., will be available May 15, says Darr Aley, director of marketing for online development. A chat area called "Club Interop" contained only four forums, none of which held more than three messages. Interopolis 3D caught my eye with its "three-dimensional real-time graphics." But I ran out of patience downloading the required 4.5M-byte Virtual Reality Modeling Language viewer, which runs only on Windows 95 or Windows NT. It doesn't run on Windows 3.1, which i and many corporate users still run.

One-stop shopping for networking information is tempting. But at least for now, Interop.com provides little you can't get by searching the Web or in Usenet discussion groups.

— Robert L. Scheier

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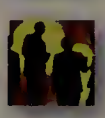

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THINK SIMPLE

Simplify support

"You need to resist the temptation to have too many people involved" in supporting remote workers, says Kathy Cruz, chief information officer at VeriFone, Inc.

The Redwood City, Calif., firm, which helps retailers and others automate sales transactions, comes as close as any to a "virtual" company. Many of its 2,800 workers in 38 countries work daily at a customer site, at home or in a satellite office.

"Everyone has connectivity, including voice mail, E-mail and intranet access, from everywhere," Cruz says. A local call connects users worldwide to VeriFone's private leased-line network, intranets, VMS mail and Novell, Inc. NetWare 3.1 LANs, she says.

Single help desk

All help calls from VeriFone employees are routed to an 800-number at a 24-hour, seven-day-a-week help desk in Honolulu. (A separate help desk handles customer calls.) The small percentage of problems that help desk workers can't handle are passed on to experts at the appropriate technical competency center.

Cruz says having a central focal point builds confidence in IS support and reassures remote workers. "If I am a user, I know I can call a single number," she says. "I don't need to worry if the help desk is open."

She says every company system, connection and network is monitored constantly, so help desk staffers can usually tell callers how widespread the problem is. "If users call and say, 'The network is slow. What's going on?' the help desk can say, 'It's a lot bigger problem than you,'" Cruz says. Even language is standardized: English or Chinese.

Most companies haven't set up special help desks for remote users, says Charlie Grantham, a consultant and president of the Institute for the Study of Distributed Work in Oakland, Calif.

Provide emergency backup

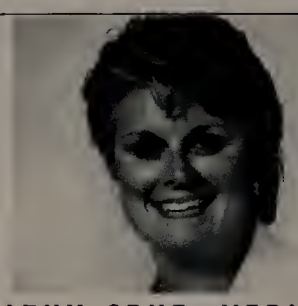
In emergencies, a voice-mail recording advises callers to use a commercial provider until service is restored.

"In the mud slides we had last year, we were able to put up a message that says, 'Pac Bell says connections will be out for 48 hours. Use CompuServe to connect,'" Cruz says.

Create a telecommuting lab

One way to avoid support problems before they start is to create a simple telecommuting lab, Gordon advises.

"Take a laptop and a desktop PC and modem. Sit people next to a line, and dial 9 out of the office as if they were working at home. If you don't get everything right in the office, it will never work right 30 miles away," he says.



KATHY CRUZ, VERIFONE

"If I am a user . . . I don't need to worry if the help desk is open" because VeriFone has one worldwide help desk number.

Simplify access

Experienced hands say simple telework support starts with easy access to corporate networks and systems. Take Delta Airlines. The Atlanta-based carrier wants to make it easy for as many as possible of its 18,000 employees in the region to have remote access during the Summer Olympics, says Ray Bernal, remote access administrator at TransQuest Information Solutions, Delta's service company.

Leverage existing networks

To avoid creating complex and expensive new telework systems, Delta plans to make the most of two major existing networks, Bernal explains. Remote users who need only the most basic connectivity can dial in with IBM 3270 emulation to a Hitachi Data Systems Corp. mainframe on one corporate network. Or they can join the 1,500 workers who currently dial in to a Shiva Corp. Token Ring network.

It isn't the fanciest, whiz-bang support, but it's secure, reliable and sidesteps complex questions about hardware and software support, Bernal says.

The setup is also flexible. For example, it can be used to quickly set up five or six temporary ticket locations downtown during the games and support hundreds or thousands of teleworkers.

Use commercial services

Another way to ensure simple connectivity is to use commercial services to support teleworkers, Grantham advises. Why pay $200 a month per person or more on company infrastructure, he asks, when commercial connectivity costs as little as $10 a month?

CompuServe, Inc., America Online, Inc., MCI Communications Corp., Sprint Corp., AT&T Corp. and others recently announced turnkey intranet services and other products that can be easily adapted for teleworkers.

Simplify standards

What's true in the office is even more true outside of it: Fewer software and hardware choices mean fewer headaches.

"Your worst nightmare is an unsophisticated user 30 miles away on a 386 trying to make something bizarre happen with an obscure software package, and he can't get someone to answer the help desk phone at 10 p.m.," Gordon says. "Standardizing on a smaller set of products greatly reduces complexity."

Don't over standardize

Avoid getting too specific. Workers at VeriFone can spend their $3,000 to $5,000 allowance on any IBM, Dell Computer Corp. and Compaq Computer Corp. notebooks. The company provides Datastorm Technologies, Inc.'s ProComm and Microsoft Corp.'s Windows 95 software.

"It's very hard to standardize [on a PC] when every two months there's a new model. You have to remain somewhat flexible," says Kristin Weitz-Rammer, IS manager for global telecommunications at S. C. Johnson & Sons in Racine, Wis.

At Delta, some project managers and other key workers get company-issued laptops, but most teleworkers use their own equipment. "People feel comfortable with their own modems and PCs," Bernal says.

Create a travel bag

S. C. Johnson is experimenting with creating a "travel bag" for remote workers in 40 countries. "It would basically include all the things you need to be a mobile worker," says Weitz-Rammer. Workers would get a choice of two or three laptops, depending on their needs and equipment available in their region. "It would also include basic information about how to get connected and what to do when your battery dies," she says.

The payoff? "Limit setup support, up-front training and post deployment support. Plus, we can leverage corporate buying power," Weitz-Rammer says.

Don't overdo it

A warning: Keeping it too simple can be stupid. Gordon warns IS managers to beware of false economy.

"I'm in favor of simplicity as long as it isn't setting us back a generation by ignoring the inherent processing power of the personal computer or running up phone bills that far exceed the cost of hardware," he says. ■

Maglitta is *Computerworld*'s senior editor of corporate strategies.

Telework trivia

Some 46 million U.S. workers worked from home last year, either formally or ad hoc, according to New York-based researcher IDC/Link Resources. The fastest growing group: after-hours telecommuters. Their ranks swelled 2.5 million to 11.5 million.

Resources

- **http://www.gilgordon.com**
  Tips, research and products from around the world by Gil Gordon Associates consulting.
- **The Telecommuters Handbook**
  McGraw-Hill Companies, Inc.
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  Practical advice, resources and cases.
- **Institute for the Study of Distributed Work**
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  Consulting and research, especially strong in telework and technology, human engineering and business process re-engineering.
- **http://www.att.com/onthego/telecom.html**
  AT&T products and services for telecommuters. A good example of current vendor offerings.

Weirdos

Into every manager's life, some brilliant but eccentric techies must fall. How do you keep them productive without driving you nuts? BY ALAN S. HOROWITZ

Even among techies, Rich was on the far side. The systems programmer not only worked when most others in his position slept, but he also exercised during slow times by barreling through the office corridors on his bicycle.

Or he did until he almost ran over the chief operating officer, who fired him. The organization paid dearly. Its online system, which Rich had maintained, nearly came to a standstill. Rich had to be rehired at a higher salary. "Rich was paid for the insult," says M. Victor Janulaitis, CEO of Positive Support Review, a management consulting firm in Santa Monica, Calif.

Not all techies are like Rich, but Riches are common enough that information systems managers need to know how to motivate and control them. Skills shortages make managing valued but make eccentric IS staffers a bigger challenge than ever, says Frank Niepold, manager of electronic publishing at Chubb & Son, Inc., an insurance company in Warren, N.J.

"Twenty years ago, we could force people to adapt to a certain mold because there was a buyer's market. There were lots of Cobol programmers to hire. Those days are over. There aren't many with, say, Lotus Notes or Oracle skills," Niepold says.

Some eccentricities, such as unusual fashions, strange work hours and unconventional lifestyles, are fairly harmless. Others, such as childlike personalities or a hatred for corporate formalities such as performance appraisals, documentation, procedures and meetings, can make those who harbor them harder to work with.

Sheila Brady, director of Apple Computer, Inc.'s Macintosh Modern OS Group, had a very effective programmer whom she asked to mentor junior programmers. He refused, claiming that his knowledge gave him his competitive edge and declaring he wouldn't share it with anyone. Good as he was, Brady refused him a promotion, and he eventually left the company.

When possible, some managers use a front man to help a programmer get through meetings. Niepold supervises a superb programmer with minimal people skills. To compensate, Niepold has someone else from the IS department run interference during meetings with customers. This front man does all the questioning and chitchat as the programmer sits in silence and listens.

Employees who hate corporate trappings are allowed to skip meetings when possible, set their own hours, do only essential paperwork and bend the dress code. "You protect them from the corporation," Niepold says. When other staff members are resentful of the special treatment given these unusual people, Niepold tells them, "We'd love to treat you the same" if you achieve the same level of technical skills.

Effective IS managers have to think like psychologists to understand what motivates their highly creative charges. Supersmart people can't be forced to work on something they aren't interested in, Brady says. Managers must "figure out who in [their] organization likes to work on what particular kind of problem and then match the person to the problem."

Managers should accommodate some peculiar work habits. Niepold once had a foreign-born Cobol programmer who wrote code that read from bottom to top on the screen, which drove his American counterparts nuts. "I let him write the first shot of the code, and then somebody else rewrote all of it [from top to bottom]," Niepold says.

IS managers must figure out if an eccentric can work on a team. Creative types may not list fraternities or memberships in business organizations on their resumes, "so we look for volunteer work and ask directly if the person likes working on a team," says Debbi Gillotti, vice president of corporate MIS at Duracell International, Inc. in Bethel, Conn. While she likes working with those "who march to a different drummer," she tries to avoid true loners.

JOE SORREN

"Often it's not that they are antisocial. They just have odd requirements, or their behavior is bizarre," Niepold says. "You have to make sure they understand there's a limit to just how isolated they can be."

Not all tendencies of eccentrics should be catered to, and that fact requires a delicate balancing act by IS managers. Brady warns. "If you micromanage [eccentrics], you'll just cut their creativity." Yet they need boundaries, perhaps more than most, to stay focused — much as they may resist them. These "people need a vision, or they'll make up their own," he says.

They enjoy meaningful technical challenges, Niepold says, but "you have to carefully define boundaries ... such as technical issues they shouldn't deal with, deliverables they must generate or certain problems they must resolve first."

With proper chemistry, the bicycle-riding Riches of your organization can continue on their personal odysseys while helping the company reach its destination.

Horowitz is a freelance writer in Salt Lake City.

Weird science

Five tips for managing the weirdos you depend on:

- **Set clear boundaries in fire-engine red; post goals in neon lights.**
- **Cut them some slack regarding rules and red tape.**
- **Put on your listening ears, kiddo. Don't expect your Einstein to be the Great Communicator; you'll have to be.**
- **Don't understand your resident genius' techno-speak? Stop pouting, and learn the lingo.**
- **Remember, the opposite of happiness isn't unhappiness. It's getting locked in a technical-challenge deprivation chamber.**

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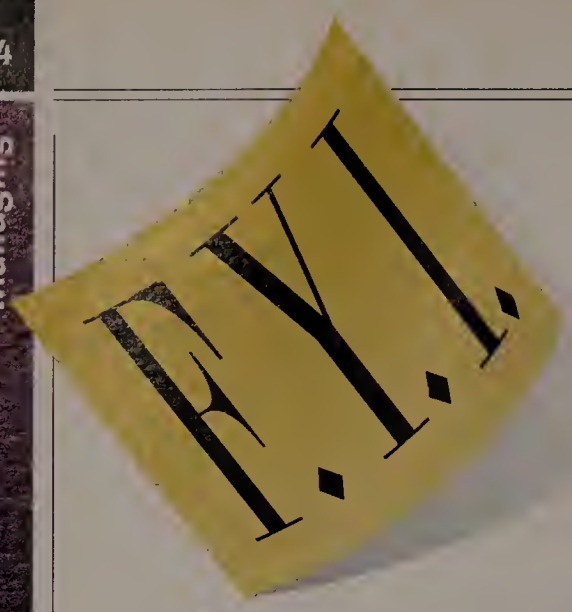
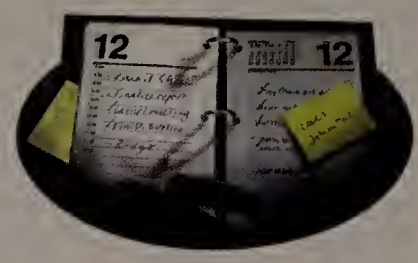




June conferences

MANAGEMENT

Information Technology Asset Management: Orchestrating Order from Chaos. Scottsdale, Ariz., **June 3-4** — Contact: Ashley Pearce, Gartner Group, Inc., Stamford, Conn. (800) 778-1997.

NetSec '96: Network Security in the Open Environment Conference. San Francisco, **June 3-5** — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2626.

Project Leadership Conference. San Francisco, **June 3-5** — The event focuses on information systems project management. Contact: Project Leadership Conference, Hurst, Texas (800) 477-6532. E-mail address: plc@abtcorp.com.

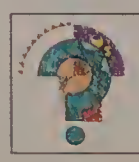
Strategies for Survival: Survive's Third Annual Conference & Exposition. Chicago, **June 4-7** — The event focuses on disaster planning and recovery. Contact: Survive, Morristown, N.J. (800) 787-8483.

1996 Enterprise Data Center Strategies Conference — S/390: Riding the Rebound to the Year 2000. Oakland, Calif., **June 5-7** — Contact: Meta Group, Inc., Stamford, Conn. (203) 973-6785. E-mail address: maryw@metagroup.com.

1996 Women in Technology Conference: Discovering Women. Santa Clara, Calif., **June 5-7** — Contact: International Network of Women in Technology, Sherman Oaks, Calif. (800) 334-9484. Web address: http://www.witi.com.

1996 Business Re-engineering Conference: Re-engineering Your Business for Growth. New York, **June 6-7** — Contact: The Conference Board, New York, N.Y. (212) 339-0345. E-mail address: orders@conference-board.org.

Network Futures: How to Succeed in Chaotic Times. San Diego, **June 10-14** — Includes two events: Extending the Enterprise Network (June 10-11) and The Interconnected LAN (June 12-14). Contact: Ashley Pearce, Gartner Group, Inc., Stamford, Conn. (800) 778-1997. E-mail address: apearce@gartner.com.



Tim Berners-Lee

DCI's Data Warehouse World. Santa Clara, Calif., **June 11-13** — Contact: Digital Consulting, Inc. (DCI), Andover, Mass. (508) 470-3880. E-mail address: ConfReg@DClexpo.com.

GAMES Exposition and Conference. New Orleans, **June 13-15** — Contact: Global Alliance for Managing Enterprise Systems (GAMES), Chicago, Ill. (800) 298-5004. Web address: http://www.games.org.

Center for IS Research Annual Conference. Cambridge, Mass., **June 17-20** — Contact: MIT Sloan School of Management, Cambridge, Mass. (617) 253-2348.

IT Systems Conversion for the Year 2000. Boston, **June 17-18** — Contact: IBC USA Conferences, Southboro, Mass. (508) 481-6400. Web address: http://www.io.org/~ibc/it2000.

DCI's Year 2000 Issues and Answers Conference & Exposition. Framingham, Mass., **June 19-21** — Contact: Digital Consulting, Inc. (DCI), Andover, Mass. (508) 470-3880. E-mail address: ConfReg@DClexpo.com.

IT Training Conference (ITTC): Bridging the Gaps. Newport, R.I., **June 26-28** — Contact: ITTC, Northboro, Mass. (508) 393-2072.

The 1996 Information Management Conference: Leading Instead of Managing Information Technology. Chicago, **June 27-28** — Contact: The Conference Board, New York, N.Y. (212) 339-0345.

INDUSTRIES

American Trucking Association/Management Systems Council's (ATA/MSC) 30th National Conference & Technology Exhibition. San Antonio, **June 2-5** — Contact: ATA/MSC, Alexandria, Va. (703) 838-1721.

Advanced Health Care Online. San Francisco, **June 6-7** — Contact: IBC USA Conferences, Inc., Southboro, Mass. (508) 481-6400. Web address: http://www.io.org/~ibc/healthnet/.

Retail Systems '96 Conference & Exposition. Dallas, **June 10-13** — Contact: Retail Systems '96, Newton, Mass. (617) 527-4626.

FinExpo '96: The National Financial Information Technology Exposition and Conference. New York, **June 18-20** — Contact: Blenheim NDN, Mountain View, Calif. (800) 232-3976.

INTERNET

DCI's Internet Expo/Web World/E-mail World. Chicago, **June 12-14** — Contact: Digital Consulting, Inc. (DCI), Andover, Mass. (508) 470-3880. Web address: http://www.DClexpo.com/.

CyberPayments '96. Dallas, **June 18-19** — A conference on payments and the Internet. Contact: Financial & Business Media Associated Ltd., Cleveland, Ohio (800) 529-7375. E-mail address: fbma@en.com.

***Computerworld*'s Intranet '96 Conference.** San Jose, Calif., **June 25-26** — Contact: Conference registration, Computerworld, Inc., Framingham, Mass. (800) 340-2366.

Utilizing Intranets or Internal Webs to Maximize Information Sharing in Your Organization. Chicago, **June 27-28** — Contact: Global Business Research Ltd., New York, N.Y. (212) 366-3212.

USER GROUPS

IDUG 8th Annual North American Conference. Dallas, **June 2-6** — Sponsored by the International DB2 Users Group (IDUG). Contact: IDUG, Chicago, Ill. (312) 644-6610. Web address: http://www.idug.org.

Claris Worldwide Developer's Conference. Santa Clara, Calif., **June 3-5** — Contact: Conference registration, Portland, Ore. (800) 778-9383.

TECHNOLOGIES

DAC '96: The 33rd Design Automation Conference (DAC). Las Vegas, **June 3-7** — Sponsored by the Association for Computing Machinery. Contact: MP Associates, Inc., Boulder, Colo. (303) 530-4333.

Network Storage '96 Conference. Santa Clara, Calif., **June 10-12** — Contact: Strategic Research Corp., Santa Barbara, Calif. (805) 569-5610. Web address: http://www.sresearch.com.

Client/Server Application Packages Conference. Santa Clara, Calif., **June 11-12** — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Midrange Multiplatform Expo. Chicago, **June 11-12** — Contact: National Productions, Inc., Salem, Mass. (508) 745-6010.

3D Design Conference. San Francisco, **June 12-14** — The event addresses technical information for three-dimensional designers. Contact: Miller Freeman, Inc., Mountain View, Calif. (415) 905-4994.

AIN: Advanced Intelligent Networks. Chicago, **June 17-18** — Contact: ICM Conferences, Inc., Chicago, Ill. (312) 540-3856.

A/E/C Systems '96. Anaheim, Calif., **June 17-20** — The conference focuses on IT engineering. It combines three previously scheduled events: M/CAD Expo, EDM/PDM Expo '96 and Utility IS Expo. Contact: A/E/C Systems International, Exton, Pa. (610) 458-7070.

Viscomm West '96. San Francisco, **June 20-22** — A visual communications exposition. Contact: Viscomm West, Norwalk, Conn. (203) 852-0500. E-mail address: viscomm@tradeshow.com.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and telephone number.

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AN INDUSTRY UPDATE WRITTEN BY INTERNATIONAL DATA CORPORATION AND SPONSORED BY NOVELL, INC.

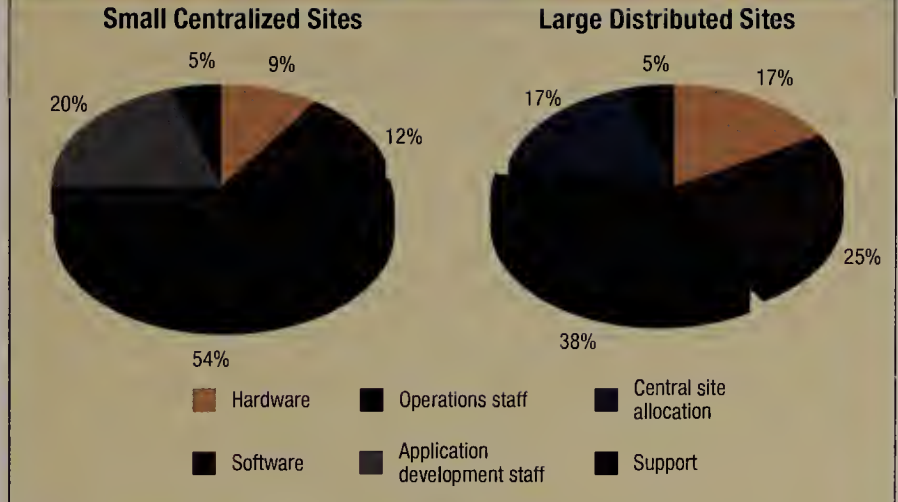
Meeting the Challenge of Client-Server Computing

Maximizing Return-on-Investment of Network Computing

The migration to client-server computing is affecting organizations both large and small almost everywhere on the planet. Computer users today have extensive access to global network-based resources, including communication gateways to other companies, individuals, and markets worldwide. Signs of this connectedness abound:

- Last year the number of LAN users worldwide hit nearly 100 million, double the number in 1993. By 1999 the number will double again
- In the same year the number of people in the world with electronic mail boxes topped 40 million. By 1999 the number will be over 125 million
- Groupware users numbered over 30 million worldwide by the end of 1995; by 1999 they will number over 250 million

Figure 1 — The Hidden Costs of Client-Server



Source: International Data Corporation, 1996

So we are heading for a wired workplace, a wired marketplace, even a wired society. However, there is a price to be paid for all this connectivity. The nearly universal implementation of client-server systems requires living with new levels of complexity and new hardware and software that people must be trained to use. Moreover, highly skilled personnel must be hired to install, manage, maintain, and administer these far-flung networks. The result is that staffing costs have become the largest contributor to total networked computing costs, regardless of the size of the installation (see Figure 1).

Until now, companies have justified the costs and complexities of client-server computing by competitive advantage–it is a very flexible and adaptable computing style. But when client-server is the norm, where will the competitive advantage lie?

IDC believes that companies that learn to manage their networked resources through technology and training will win out over their peers in the long run. Companies that understand the true costs and true benefits of client-server computing will generate quicker return for their investments. Companies that relentlessly optimize, integrate, and upgrade existing systems will stretch IT resources further and be able to reinvest sooner than competitors taking a wait-and-see approach.

Areas of Opportunity

IDC and Novell have teamed to produce this White Paper in order to help IT managers develop a strategy for maximizing return on investment in networked computing resources. It is the executive overview of three studies researched and written by IDC and sponsored by Novell. In the research it conducted,

Driving Down Networking Costs

GroupWise:

Typical annual return-per-user of 334%

Nearly $400,000 a year saved in phone costs at Farmland Foods

Courier costs cut $16,000 a year at Sheppard, Mullin, Richter & Hampton

NetWare 4:

On average 15% less expensive than NT Server from Microsoft

50% increase in users supported by a single server

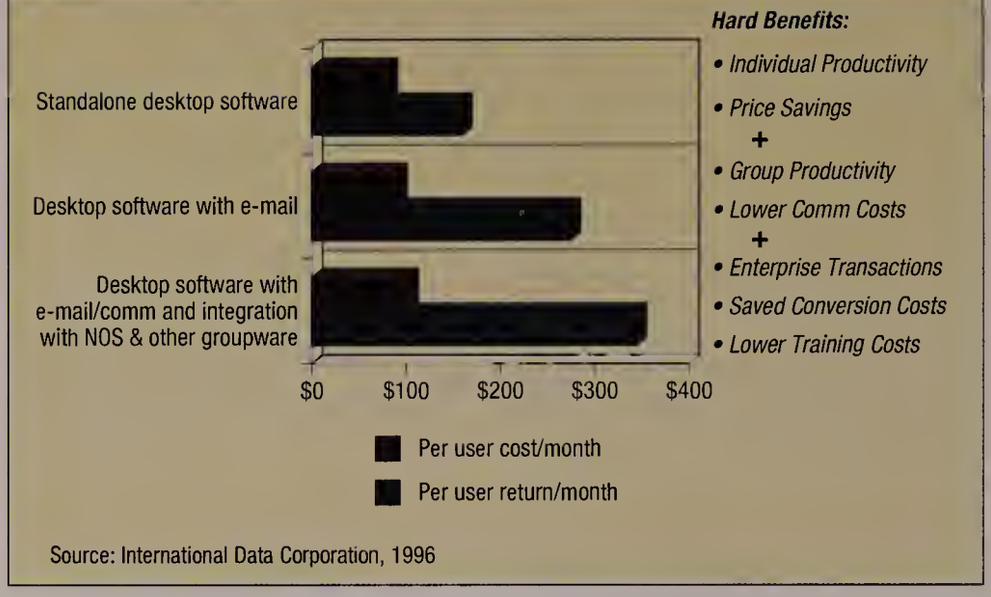
ManageWise:

$95,784 savings in business efficiency per 100 users

50% reduction in network downtime

19.7 day payback

Figure 2 — The Investment Leverage from Groupware



Source: International Data Corporation, 1996

IDC found three areas of networked computing that are focal points for ROI leverage:

1. The choice and use of communication applications such as e-mail and groupware
2. The choice and use of next-generation network operating systems
3. The use of advanced network and system management tools

In addition, IDC found that when products in support of all three of these areas work together in an integrated fashion—such as Novell's GroupWise, NetWare 4.1, and ManageWise products—benefits are compounded. Support and training costs are lower, conversions and upgrades occur faster, applications come on stream sooner, and downtime is reduced.

Applications for the Next Wave

The migration to client-server computing is a quest to provide users with access to information and computer resources beyond their desks. One of the key tools for this is groupware software, epitomized by Novell's GroupWise, software which integrates e-mail with scheduling, calendaring, and other workgroup oriented functions. The market for groupware is exploding as organizations find they can use it—specifically the e-mail function—as a platform for providing workgroup and even enterprise-wide access to information and resources.

In the research IDC conducted, almost half of the business benefits organizations received from migrating to groupware came from better internal and external communications. For instance, Farmland Foods, a $2 billion dollar meat processing company, found that since installing GroupWise, documents once faxed in 15 minutes now take less than five to e-mail. Further, the use of GroupWise saved almost $400,000 in voice phone calls a year.

Figure 2 illustrates how electronic communication and collaboration generate cascading benefits. Standalone desktop software can impact individual productivity, but when combined with e-mail, that software can improve the productivity of a whole workgroup, not just the individual user. If the e-mail is specifically designed to work with the desktop software and with the network software, as say Novell's GroupWise is with NetWare 4.1, then those workgroup benefits are compounded.

This efficiency pays real dividends. When Sheppard, Mullin, Richter & Hampton, a Los Angeles law firm, made the move to GroupWise it found the support ratio for lawyers dropped from one assistant for every two lawyers to one for every three. GroupWise scheduling cut countless hours in tasks as routine as setting up meetings; GroupWise e-mail cut courier costs by $16,000 a year.

For most companies, an investment in groupware is considered an incremental cost. The hardware is already in place, as is the network. Moreover, the support costs—which account for more than 50% of the cost of operating a networked PC—are shared across dozens of applications.

But even with all the hardware, network, and support costs amortized across the groupware software, it's a bargain. IDC's research with Novell's GroupWise customers found that a typical installation required only about $250 in fully-loaded first-year costs—less than 5% of the annual cost of operating and supporting an end-user personal computer.

For that $250 investment, those same GroupWise customers found that their first-year return was over $800 on lowered communication and clerical costs alone. Meanwhile, they accrued an array of other concrete benefits, such as fewer meetings (and thus less travel and meeting administration), easier document handling, and so on. For every single GroupWise customer interviewed by IDC, return-on-investment exceeded expectations.

Modernizing the Network

If the LAN is the heart of client-server computing, then the network operating system is its soul. As LANs have evolved from peripheral information systems to the primary components of mission-critical systems, they have become more robust and more scalable. Along the way they have also provided IS personnel with the tools to manage network resources as never before.

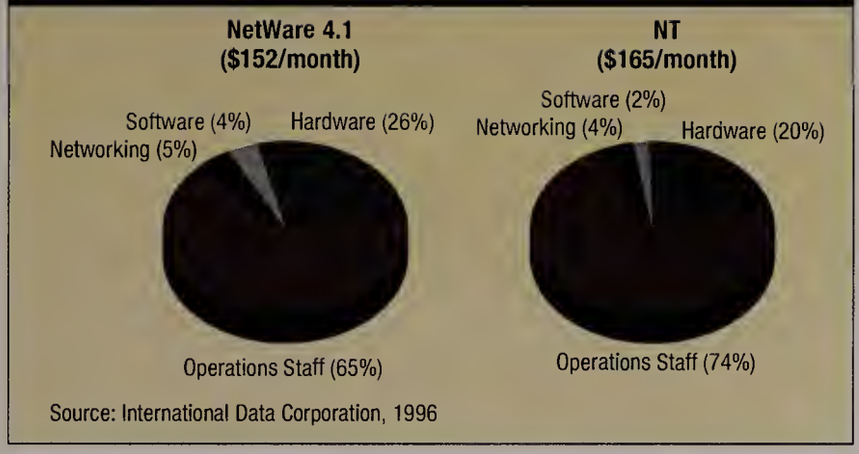
In fact, powerful new management capabilities are why many people are migrating to NetWare 4.1. With more than 375,000

licenses installed worldwide as of 1995, it is the most popular network operating system. Three key reasons for its popularity are:

- Greater functionality
- Improved management
- Directory services

Figure 3 illustrates how survey respondents believe migrating to NetWare 4.1 has enhanced network productivity—with ease of administration at the top of the list, mentioned by nearly 40% of respondents. NetWare 4.1's greater functionality has promoted companies' reliance on LANs and delivered on the ultimate promise of client-server—increased productivity.

Figure 4 — Network Cost-to-Use at Medium (300 User) Sites (Costs After Migrating from NetWare 3.X)



Source: International Data Corporation, 1996

According to recent surveys conducted by IDC, LAN managers report remarkable improvements in managing their networks under NetWare 4.1. Although they expected the number of nodes on their networks to grow by 260% in the 12 months following installation, they anticipated the number of file servers on the network would grow by only 163%. In other words, under NetWare 4.1, they expect to increase the ratio of users per server from 41 to 60—an improvement of 50%.

In addition to increasing the number of users per server, NetWare 4.1 provides a single point of administration with Novell Directory Services (NDS) that results in a lower cost of network administration. Figure 4 shows how, in medium-sized sites, NetWare 4.1 generates 14% lower network administration costs than Microsoft NT, primarily by increasing the user to support staff ratio.

Figure 3 — How NetWare 4.1 Improves Network Productivity

Source: International Data Corporation, 1996

Novell and other networking companies have set their sights on developing new technologies that will make tomorrow's networks more efficient and flexible. Novell has developed a Smart Global Network strategy, which entails making the network available to anyone—anytime, anywhere. An essential component of the Smart Global Network is Novell Directory Services (NDS), which enables companies to keep track of and connect all of a network's users, workgroups, hardware and software on one common access and administrative framework. NDS provides directory services technology that can handle the management of countless resources on heterogeneous systems spread around the globe. Also fundamental to Novell's vision of the future is an open set of application programming interfaces (APIs) that will make it easy to incorporate NDS and other NetWare 4 networking services into distributed applications.

Providing End-to-End Network Management

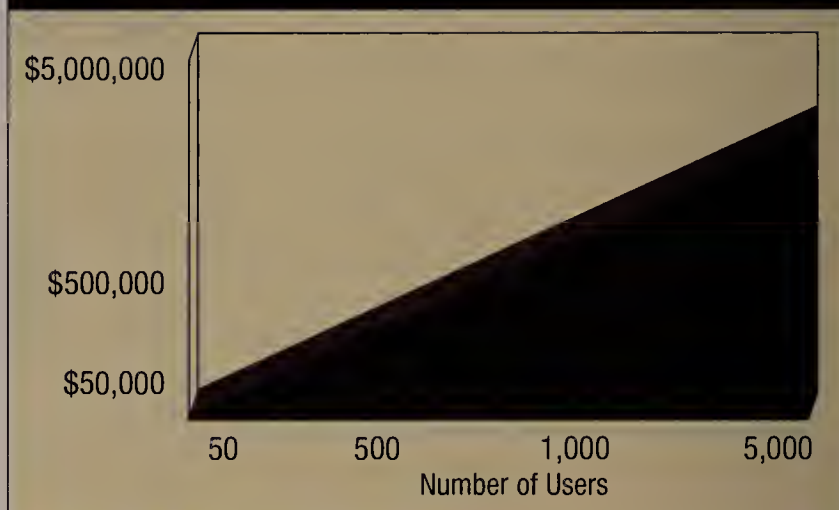
Staffing costs and end-user productivity are the issues that keep IS managers awake at night. And that has never been more true than it is today. As networks expand and intertwine, the critical success factors for network managers will include:

- Increasing network uptime, both in operation and when installing new users or applications
- Increasing efficiency by supporting rapid network growth without commensurate growth in staff
- Increasing responsiveness, fixing problems in a way that minimizes idle time for users or within business processes

To meet these needs, Novell offers ManageWise. It combines both network management and PC administration into a single, integrated package. Previously, most PC administration and LAN management products worked independently of one another, each requiring dedicated staff and resources.

ManageWise is the integrated solution that offers a single view of the network. It provides analysis tools for understanding bottlenecks; permits the configuration, inventory, and diagnostics of PCs from a single local or remote site; and provides tools for monitoring and managing remote and local servers. IDC's research demonstrates that even small and medium-sized companies can achieve significant cost savings by implementing ManageWise (see Figure 5). Network managers found that the most significant gains in efficiency were realized in server operation and help desk functions. Using ManageWise also increased LAN manager responsiveness. Before implementation, only 30% of network or end-user problems could be solved from a central site; afterwards, that number rose to 60%. This is especially important for companies with highly decentralized operations.

Figure 5 — Average Annual Savings From ManageWise



Source: International Data Corporation, 1996

Since the software-licensing, maintenance, and training costs of a product like ManageWise are low compared to the number of users potentially affected, the return on investment can be surprisingly high. Across the survey base polled by IDC, ManageWise paid for itself on average within 19.7 days.

For every 100 users, implementing integrated management with ManageWise saved $95,784 annually. These savings are attributable to the following:

- More efficient systems management, including an increase of 33% in the number of servers and 25% in the number of PCs a staff person can support, and a decrease in travel of 53%, leading to annual cost savings of $14,500
- Significant reductions in the time required to perform key management tasks—such as five hours in moves and changes, nine hours in server maintenance and configuration, seven hours in help desk and support, four hours in problem tracking, three hours in printer maintenance, etc.—saving $30,844 annually
- Dramatic reductions in network downtime (over 50%) due to network outages, delays addressing problems at the desktop, or time spent installing and configuring applications, generating annual savings of $50,440

Cost-Savings and Client-Server: They Aren't Mutually Exclusive

Believe it or not, return on investment in networking can be quantified. While it may sometimes seem that networks are growing out of control, vendors like Novell are in fact working diligently to develop products for simplified, easily managed local, wide-area, and global networks. Because of the strategic and financial advantages of networking wherever systems reside and users roam, organizations will be forced to expand the reach and complexity of their networks simply to remain competitive.

Astute companies will concentrate on migrating to client-server computing in ways that maximize both the resources available to run networks and the effectiveness of those who ultimately generate revenues and profits—namely, end users.

Call to Action

This is an executive overview of a three-part series of White Papers entitled:

- Novell GroupWise: Leveraging Desktop and Network Investments
- Novell NetWare 4.1: Reducing Cost of Ownership
- Novell ManageWise: Maximizing Returns on Networking Investments

For a free copy of the Novell Business Advisor containing tools that help you assess return on investment with NetWare, MangeWise, and GroupWise, as well as electronic versions of the IDC White Papers, call 1-800-665-4586 or visit either the Novell home page at http://www.roi.novell.com or the IDC home page at http://www.idcresearch.com

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In Depth

JAVA at WORK

Most everybody agrees it's the language of the future. But we wondered what apps IS departments are brewing up right now.

By Roger L. Kay

Computer programming's high priests have been born again, and their new religion is Java. But the teeming masses are waiting at the foot of the mountain for some rock-solid proof that this new god will deliver.

Sun Microsystems, Inc. — inventor of the programming language — is beating the drum to persuade everyone to adopt Java for their programming tasks, but corporate information systems departments are taking a more sober view of how this latest craze can be used to write serious business applications: software that, in the line of fire, will make a real contribution to corporate competitiveness.

Susan Goeldner, manager of Internet technology at FedEx Corp. in Memphis, has spent the past year managing six of the company's top programmers as they bird-dog FedEx's Internet effort. She sent two of them to a Java developer's class. Their mission: Figure out what the new language is all about and integrate Java applications with FedEx's enterprise system.

Goeldner has already (it's easy to forget that Java 1.0 was officially released only a few months ago) lobbied for rapid adoption of the language for some FedEx tasks. She says she likes the little things Java can do. For example, when a World Wide Web page is opened, a client application can place the cursor in the field most likely to be used. Admittedly a modest trick, this nevertheless eliminates an annoyance that Web surfers face.

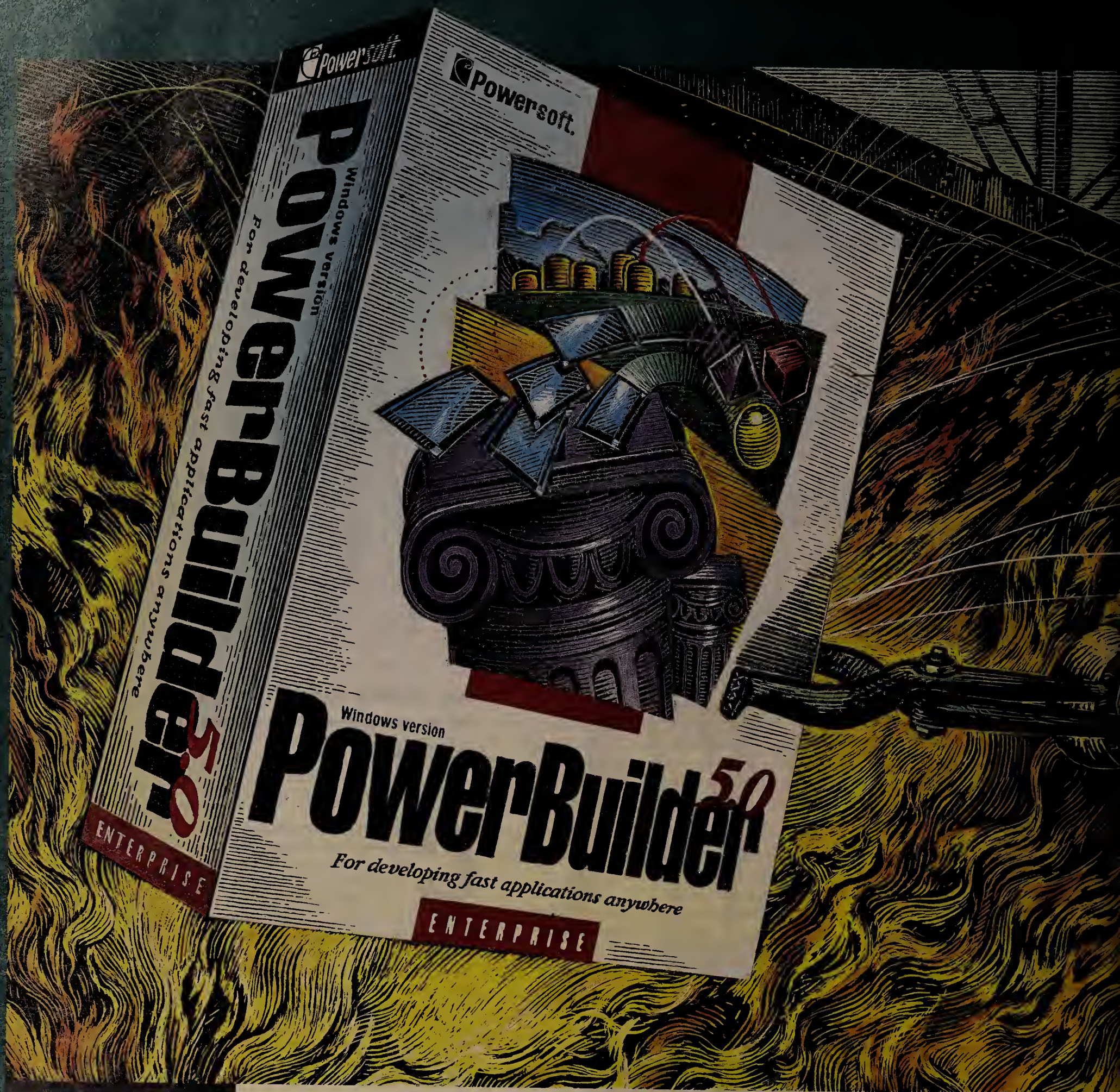
Goeldner is forming a picture of a full-dress Internet application that makes use of Java. In the near future, she says, registered FedEx customers will be able to dispatch a courier by using the company's Web page. Users will key in a registration code and a digital identification and then receive a "from" form already filled out. An electronic address book written in Java and stored on the client will look up the "to" information of frequent recipients. After checking a few more boxes electronically, users will transmit the page and trigger a courier request.

Tom Boos, a senior vice president of technology and development at

Java at work, *page 88*

SUSAN GOELDNER lobbied for early adoption of Java at FedEx despite qualms about security

JACK KENNA



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JAVA at WORK

CONTINUED FROM PAGE 85

R. R. Donnelley & Sons Co.'s Coris Division in Willowbrook, Ill., is another convert. His group is developing Java applications.

Boos is using Java to create Content Manager, a publishing platform based on Oracle Corp. software. Content Manager, slated for deployment later this year, will let Donnelley customers store multimedia content online, do "soft proofs" (proofread an electronic copy) and initiate a publishing event in hard copy, on CD-ROM or at a Web site. Donnelley customers are primarily large distributors of printed materials, but increasingly, they are distributors of electronic information products.

Donnelley is using Java to write the module that distributes content submission forms to customers. Distributing forms this way relieves the company of sending out hordes of client disks to its customers, only to repeat the procedure when the program is updated.

Rick Brennan, manager of Web services at National Semiconductor Corp. in Santa Clara, Calif., is a Java enthusiast who is also a bit cautious. "The implementation isn't there yet, but it's going to be," he says.

National Semiconductor is a partner in the development of the Donnelley application and has two other Java projects under way. One lets users of any Java-enabled browser click on audio/visual links and witness live feeds.

The other Java application lets design engineers execute complex queries against National Semiconductor's product database of 30,000 items. It uses parametric search techniques that take advantage of Java's graceful inheritance characteristics to limit the search domain. Brennan calls this project, which was jointly undertaken with Cadis, Inc. in Boulder, Colo., "a full-blown database app."

"We're on the bleeding edge, and we're bleeding."

– **RICK BRENNAN**, manager of Web services at National Semiconductor

Brennan praises Java's openness. "People haven't gotten greedy and tried to siphon the good things off," he says. "Sun is the keeper of the keys, and they have a lot of power in their hands. They have not made a lot of missteps. They've done the big things right. I just hope they continue to make prudent decisions."

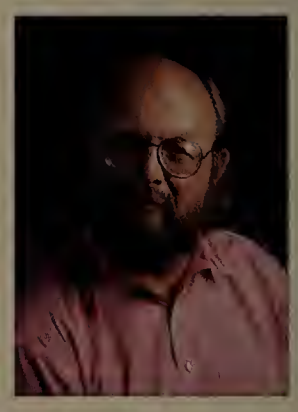
Of course, there are hurdles. Security concerns may be the biggest factor slowing IS adoption of Java. Goeldner trusts Java's security only as far as the company firewall — and with good reason. In March, researchers at Princeton University in Princeton, N.J., found a serious security flaw in the language. Minor security bugs have been detected elsewhere, and still others may turn up as the software matures.

In the longer term, Goeldner sees FedEx writing true Web applications. But she notes that Java still has a way to go. "There are things that aren't there yet," she says. Perhaps the most serious hole for FedEx is the application programming interface for printer control. The printed air bill, with its package tracking number and bar code, is vital to the company's business process. For the system to work smoothly, the customer must be able to initiate the courier request simultaneously with a request to the printer to generate an air bill with the correct information on it.

But Goeldner is ready to live with the growing pains in order to adopt Java. "When the rest of the pieces fall into place," she says, "we'll be able to write business applications, not just toys." ■

Kay is a freelance writer in Wayland, Mass. He can be reached at RLKay@world.std.com.

THE MAN



JAMES GOSLING, vice president and fellow at Sun and the inventor of Java, sees the problem of Java hype this way: "It's a combination of overhyped and underhyped.

"Underhyped in that some people see it as only a tool for the Web, and in particular as just plug-ins for Web browsers. It's really a broad general-purpose system that a lot of people have been using happily in other contexts.

"Overhyped in that some people see it as a way for the software industry to escape the shadow of Microsoft. This was never realistic, and is [less] so now, considering Microsoft's strong adoption."

Gosling also weighs in on the gap between expectation and reality: "There's a gap in timing. People want a lot, but it's coming out. Good development environments are now available; performance through native code generators is starting to become excellent; and the APIs are getting fleshed out."

And on what needs to happen next to keep Java development on course: "Delivery. We, and other software companies, have to keep plowing ahead. I feel pretty comfortable that we're on course and moving rapidly, but speeds are never infinite."

— Roger L. Kay

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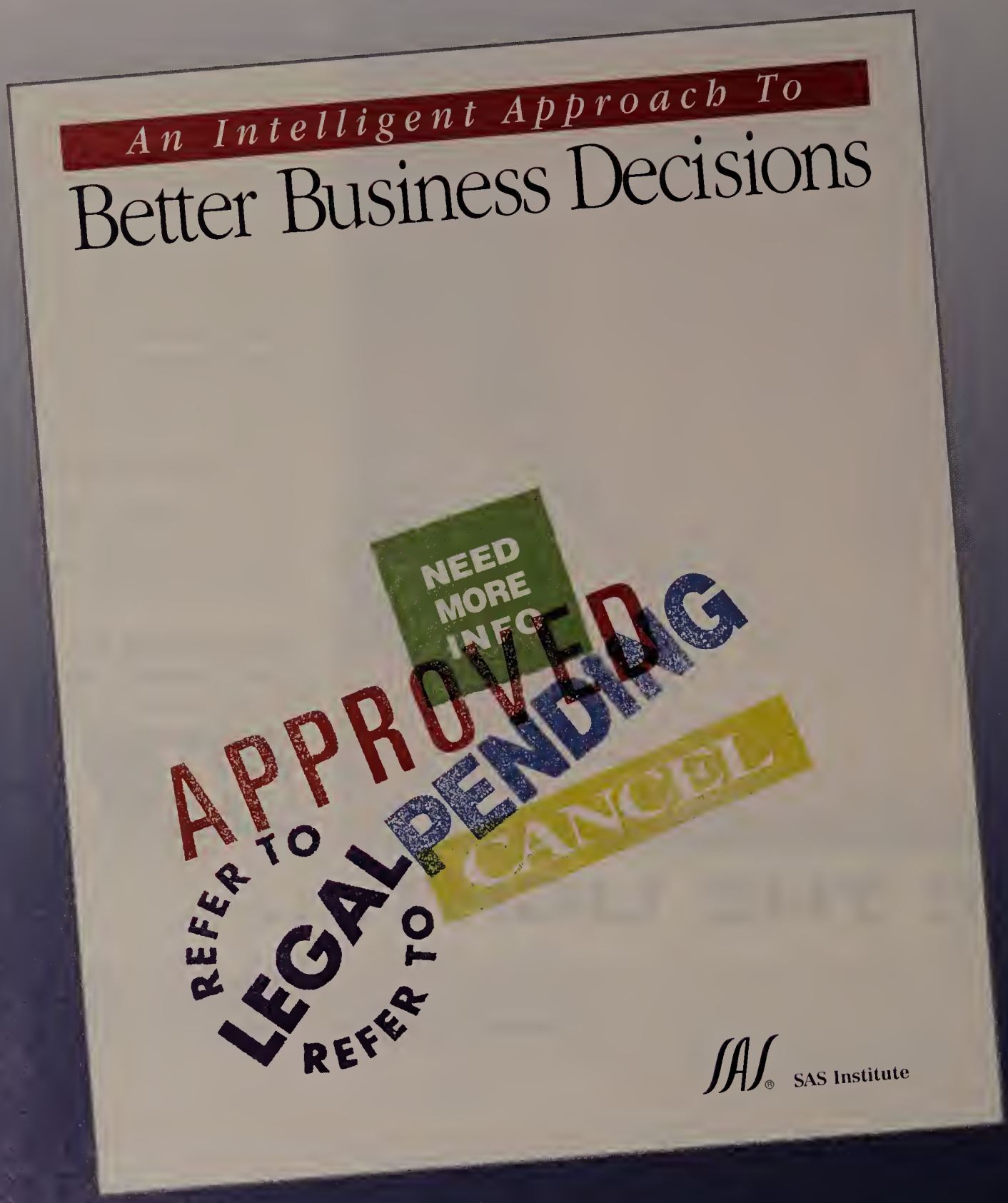

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Best of Both WORLDS

By Leslie Goff

Forget cyberspace. Think: performance space. Forget writing code. Think: writing screenplays. Forget programming Lotus Notes. Think: hitting the high notes.

Several information systems moonlighters are capitalizing on their lucrative technical skills to support creative endeavors. Their thinking: Why be a waiter when you can be a LAN administrator?

Computerworld found five enterprising technologists who, in addition to their IS endeavors, pursue another calling.

But not all of these IS moonlighters find they can have their cake and eat it, too!

Adam Walden, 26

HOMETOWN: **New York**
OCCUPATION: **Stand-up comic**
SECOND CAREER: **Former webmaster, Meta Group**

"You can't really do both . . . . When it came time to make a choice, I chose my emotional passion."

In February, Walden hit the road to pursue a passion he'd set aside after graduating from college. He debuted at Caroline's, the New York comedy club known for launching the careers of many top stand-up comics. At the time, he was still working 10-hour days at Meta Group, Inc.

The voice inside him may have been stirred by the IS consulting firm's notorious weekly meetings where analysts are called on the carpet to defend their research reports. "Meta Group certainly fosters a performance sensibility," Walden says.

Walden had performed magic shows and improvisational theater before entering the workaday world. Last January, he decided to give it another try. Walden spotted an ad for a stand-up comedy workshop and signed up.

After his November stand-up debut, he started performing his act two to three times a week at Don't Tell Mama and Stand-Up New York. In February, he gave notice at Meta and became a full-time comic.

Walden is now gearing up for a two-man improvisational show off-Broadway next month.

Harry Pierson, 26

HOMETOWN: **Los Alamitos, Calif.**
OCCUPATION: **Aspiring screenwriter**
SECOND CAREER: **Software engineer and programmer**

"I don't ever worry about my screenwriting cutting into work; it's more the other way around."

Pierson's knack for plotting flow charts is translating into a flair for plotting a series of screenplays that he has "under development," as they say on the Left Coast. "In software engineering, you're given a problem, and you have to solve it," Pierson says. "In screenwriting, you have to create a problem for the heroes to solve and then lead them to solve it with a dramatic flair."

Pierson works with a partner in the Washington area. The two send script notes and dialogue back and forth via electronic mail. Among their projects: *The Hangman*, "a dark, cyberpunkish, futuristic thriller; and *Hyper Theory*, about a group of scientists who use computers to predict the future and inadvertently cause society to deconstruct itself.

Would he give up his software engineering career if one of his scripts sold? Not likely. "You can't quit your day job based on one success. If I hated my work, maybe I'd jump ship at the first chance. But I like my work, and it pays considerably more than being a waiter."

Nobuo Kitagawa, 36

HOMETOWN: **New York**
OCCUPATION: **Oboist for "Miss Saigon," "Beauty and the Beast"**
SECOND CAREER: **IS project "temp"**

"Finding the balance among disparate elements is what musicians are trained for all their lives."

A joke circulates among Kitagawa and his fellow musicians: The best qualification for success in the IS business is a doctorate of musical arts. "Classical performers need mathematical, abstract thinking plus artistic, linear thinking," he says. "We are trained to cope with very different types of information and to combine and present them in a high-pressure situation."

Kitagawa uses these skills in his other career as an IS consultant to small businesses through the agency Mac Temps in New York. He acts as a liaison for end users and the IS department.

These days, Kitagawa's IS jobs have turned into summer gigs. During the classical music season, he's a substitute oboist for "Miss Saigon" and "Beauty and the Beast" on Broadway and a member of Orchestra New England. Of his IS skills, he says, "I'm mostly self-taught. I read and study. I buy whatever books look best. I keep up with the trade journals, and I go online. The most up-to-date information is on the Internet."

Jamey Anderson, 32

HOMETOWN: **Minneapolis**
OCCUPATION: **Performer, sound engineer**
SECOND CAREER: **IS training instructor**

"I love being a trainer — being in front of people. But part of me needs the creative thing going on, the theater."

Anderson was pursuing a full-time career in musical theater with regional troupes and touring groups before joining ExecuTrain two years ago. He found his calling as an IS trainer in an unlikely venue: the Camp Snoopy theme park in Minneapolis' sprawling Mall of America.

His supervisor at the amusement park, where he was a technician, also worked at ExecuTrain, and Anderson saw a chance to combine his love of performance with a steady paycheck. "My plan is to be happy, and to be happy takes a mix of things. One of those is maintaining a day job," he says.

Anderson took a sabbatical last year to again pursue his theatrical interests. While stowed away in the Black Hills of North Dakota for the annual passion play-like musical tribute to Theodore Roosevelt, Anderson set up a two-PC Novell LAN in his hotel room to learn the network operating system.

So far, he says he has found a certain synchronicity between his two avocations. "I feel I can take my performance experience and use it in the classroom," Anderson says.

David Vogt, 30

HOMETOWN: **New York**
OCCUPATION: **Bass player with the band "Cash Registers"**
SECOND CAREER: **Manager of IS**

"Trying to survive as a punk rocker in a corporate environment, it's probably better to keep a low profile."

Vogt has been part of New York's East Village punk rock scene since he was 13. He keeps his bass playing, rock-on alter ego on the q.t. at work, in a major Wall Street investment bank. At the bank, he oversees the selection of online information services used by the company's stock market analysts.

Vogt has been with his current band, Cash Registers, for 18 months. He describes the group's style as "high-energy, low-technique." Cash Registers plays in smoky downtown clubs and other venues in the tristate area. Last year, they cut their first single. But Vogt doesn't plan to quit his day job.

"My last band was more like, 'Let's get the show on the road and quit our jobs.' I've seen bands do that, and they often end up incredibly in debt and sometimes wishing they hadn't made it so far. I'm happy that, in this band, we're not running around trying to 'make it.'"

RIT

Rochester Institute of Technology

Faculty Position in Information Systems

The Information Systems Curriculum Team in the College of Business invites applications for two faculty positions in the area of Information Systems. These are tenure track positions, AACSB-accredited school.

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Qualified individuals should send their résumés and the names of three references to: Dr. Daniel Joseph, Information Systems Curriculum Team, College of Business, 107 Lomb Memorial Drive, Rochester, NY, 14623-5608.

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To apply please send/fax/e-mail your resume and letter of application to **C. Rommel, Human Resources Office, P.O. Box 40, Newtown, PA 18940. FAX (215) 968-1169. a-mail: mworthington@lsac.org**

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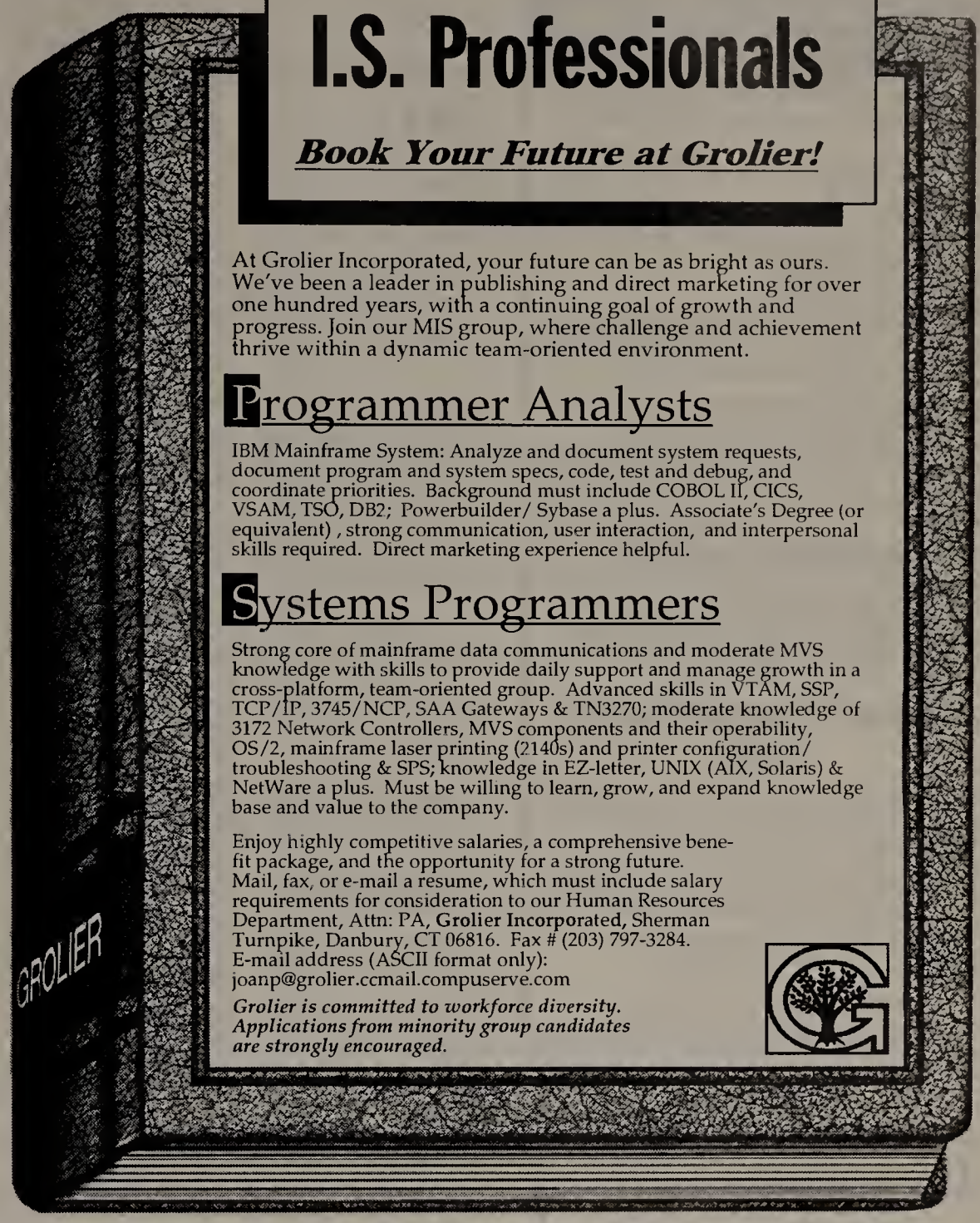

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Programmer Analyst: Analyze, design, develop, implement, test, maintain & interface computer programs for multi-user, multi-site, multi-system integrated poultry processing operation. Implement user interfaces with additional features and/or external subsystems. Evaluate & implement user requests for new/modified programs in sales, order entry, marketing, payroll, inventory mgmt., accts. payable & receivable, fixed assets & general ledger. Perform data recovery & system mgmt. functions on main system & poultry inventory tracking system (IPMS), inc. print, batch, terminal queues, user accts., backup & file restorations. Set-up & troubleshoot on terminals, RF terminals, RF units/controllers, printers, terminal servers & network/ communications equipment. Evaluate software products. Maintain IPMS, inc., interface with existing accounting systems. B.S. in Mgmt. Info. Systems; 2 yrs. exp. as Programmer Analyst or Computer Programmer; proficiency with Powerhouse's 4 components under VAX/VMS platform, DCL, Blast, KRONOS, IPMS, DOS & Windows; & background in business functions & structural methods required. 40 hr./wk., M-F, 8am-5pm, $39,303/yr. Apply in person at or by sending 2 resumes to: GA Dept. of Labor, Job Order #GA 5975524, 2419 Corporate Dr., Gainesville, GA 30504-6056 or the nearest Dept. of Labor Field Service Office.

Director of Program'g & Applic'ns Development: Plan, coordinate, supervise & manage all research, design & develop't activities of computer database for Geographic Information Systems (GIS), Automated Mapping & Facilities Managem't Systems by applying CAD, image processing principles & techniques; Manage develop't & implement'n of data capture, quality control, validation, translat'n, data integrat'n & automation processes on the VideoScan, ArcInfo, Microstation, Vision, Genasys, AutoCAD, ERDAS platforms by using AML, MDL, GML & ADS program'g techniques; Develop procedures & methodologies for securing cost-effec've project workflow & implement contract specifications; Manage contract negotia'ns, clarification/finalization of contract specifications by interacting w/ clients, $60K/yr, 8-5, 40h/wk, MS in Electrical/ Computer Sci'ce & 3 yr experience in Sftwr Develop't Project Managing position in the field of GIS w/ VideoScan, VPF Format & ArcInfo req'ed. Resume to Fla. Job SVC, PO Box C, Clrwtr, FL 34618-4090 Re:Job #FL-1427247

Systems Coordinator. Design, build and maintain databases for the City Utility Department. Handle security integrity and currency of all databases. Audit performance of existing systems and determine new technology needs. Plan computer and programming needs and supervise technical programmers. Use Oracle as the major database engine; Powerbuilder, Visual Basic and Delphi as the front end tools, and MS-Access as the small database engine. Required: B.S. Degree in Engineering Science. Must have three years experience in the job offered or three years experience in the related occupation of Information Systems Manager. Also required: Oracle Database Administration, recovering and tuning Database. Powerbuilder, Visual Basic, Delphi, Oracle Power Objects. Salary: $20.19 per hour (40 hour week) Hours: 8:00 a.m. to 5:00 p.m. CONTACT: All interested applicants send resume to: Job Service of Florida, quoting Job Order No. FL-1425633, P.O. Box C, Clearwater, FL 34618-4090.

SYSTEM PROGRAMMER II - Works in a team to develop, test & implement software systems to enhance capability of automated reservations system serving the travel industry. Must have Bachelor of Science degree in Computer Science, Engineering or a related field plus 1 yr exp. in the same or a related job (Programmer for multiplatform AS400 system using C & C++ languages; SQL; database management and; wide area network client server model) $38,700/yr - 40hrs. Monday-Friday 8:00-5:00pm. Send resume only to Job Service of Florida, 701 SW 27th Ave., #47, Miami, FL. 33135-3014, Job Order #FL-1418454.

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Director of Technical Project Management. Atlanta. Oversee and manage technical development, quality assurance, implementation planning, and customer support of warehouse management system using radio frequency and scanning technologies for automated data collection. Requires BS engineering (electronic, communication, or computer). Education to include college level courses or equiv. in wireless communication systems and communication theory. 5 years experience as technical project manager to include development of warehouse management information system (or other MIS involving receiving, order dispatching, picking and shipping and paperless inventory control) utilizing RF technology. Development experience in RPG/400. $80k to $115k. Fax resume to: Dir. Recruiting 770-955-0302, Box 960513.

Computer Systems Designer: Design, program, test major/ minor enhancements to AS/400 based field info systems commercial leasing & services apps software. Prep written specs to describe functions to be provided, develop, understand mainframe/dealer apps, develop EDI interface for invoicing, modify existing commercial leasing/services software to seamlessly interface w/ other platforms. Develop tests for close interaction w/ systems assurance/support group. Use COBOL/400, RPG/400, CL/400, SDA, Query/ 400 software/tools. Req: Bachelor's in Computer Science/ Engineering + 2 yrs exp. or 2 yrs as Systems Analyst &/or Software Engineer. $48,000/yr, 40 hrs/wk, 9-5. Submit resume to: Job Service of Florida, 701 SW 27th Ave., Room 47, Miami, FL 33135-3014. Re: Job Order # - FL 1427404.

Software Eng. in charge of design, develop., install., implem., and support of software prog. written in C++ to transfer inform. between a global positioning system (GPS) installed on embedded computer connected to PC via serial, cellular or radio freq (RF) lines. Also, in charge of the design, devel., install., implem. and support of software prog. written in Visual Basic lang interacting with SQL libraries under NT Platforms. B.S. in Computer Science req. with 2 yrs exper.; 40hr work wk, 9:00 a.m. - 5:00p.m.; Mon-Fri; Sal - $60,000 yr; Job Location-Ft. Lauderdale, FL (SEND RESUME ONLY) To: Job Service of Florida, 2660 West Oakland Park Blvd., Ft. Lauderdale, Florida 33311-1347. Re: Job Order Number FL-1406200

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Programmer/Analyst - The selected candidate will work with Engineering to help define their needs and develop innovative software techniques to automate structural analysis. Will assume total project responsibilities for system analysis, design, coding, testing and support. Requires a BSCS or equivalent and a minimum of 2 years related experience. Must have experience with structured analysis methodology and knowledge of C, C++, Visual Basic, Small Talk, FORTRAN, SQL, UNIX, DOS/Windows and VMS. Strong math background and an aptitude for physics and mechanical engineering also required. Knowledge of Object Oriented Technologies highly desirable. **JOB #95139**

For consideration, send your resume and salary requirements (REFERENCING JOB #) to: AlliedSignal Staffing, 717 N. Bendix Drive, South Bend, IN 46620.

Aerospace Equipment Systems - Tempe, AZ

Programmer Analyst II - Candidate will work to identify computer system requirements to meet our business objectives. Will develop specifications for eomplex software programming applications; provide technical support; and design, code and test programs. Requires a BSCS or related field and a minimum of 3 years experience, preferably with cost accounting systems. Must have thorough knowledge of IMS, DB/DC, COBOL, DB2, TSO, MVS, JCL and SUPRA. Project management experience also required. Knowledge of client server relational data bases and languages highly desirable. **JOB #6956**

Corporate Data Center - Tempe, AZ

Support Systems Programmer - The selected candidate will provide technical support for our Customer Support Center. Will assist in the development and maintenance of problem resolution methodologies; provide ongoing operations training and support; and apply advanced software skills and internal knowledge within area of assignment. Requires a BS in Information Systems or related field and a minimum of 4 years experience in a medium to large scale data center supporting systems software, program products and online systems. Must have knowledge of MVS system internals and externals as well as specific knowledge of online and DASD software. Knowledge of database software also required. Familiarity with client/server operations preferred. Experience with EDI processing and software highly desirable. **JOB #5651**

For consideration, send your resume (REFERENCING JOB #) to: AlliedSignal Aerospace, P.O. Box 22200, 1207-1A, Tempe, AZ 85285-2200. NO PHONE CALLS PLEASE.

Marketing Sales & Service - Phoenix, AZ

Senior Data Analyst - The selected candidate will be responsible for conceptual and logical data analysis and modeling, data integration, data ownership administration, data integrity, inventory of data, data model management and other related duties. Requires a Bachelor's degree in Business Administration, Information Systems or related field. Master's degree preferred. The ideal candidate will have a minimum of 7 years progressive experience in business/information systems including at least 3 years managing data. Strong interpersonal and problem-solving skills required. **JOB #** 4978

Senior Systems Analyst - The selected candidate will be responsible for gathering business requirements, analysis, design, testing and documentation in support of the development, enhancement and ongoing support of our computer systems/applications. Requires a Bachelor's degree in Business Administration, Information Systems or related field and 7-10 years experience working on all phases of software development projects in a team environment. Experience must include at least 5 years managing data as an asset. Proficiency with PC concepts, Microsoft Office and Project also required. Knowledge of aerospace distribution, repair and overhaul, and sales business process and applications highly desirable. **JOB #4724**

Business Systems Analyst (UNIX) - The selected candidate will provide technology-specific expertise in the UNIX environment. Duties will include: providing infrastructure planning, management and administration; supporting key business processes; providing needs assessment, coordinating deployment; and ensuring quality. Requires a BS in Computer Science, Information Science or related field and 3 years experience in operations or networking. Must have experience in the UNIX environment, including LANs, WANs and distributed computing. Strong leadership and communication skills also required. The ability to plan, conceptualize, develop, implement, maintain and support large- scale business information technology projects is essential. **JOB #6333**

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Involves technical project planning, coordination and control, infrastructure (hardware, systems software) design, construction, implementation in a multi-platform environment - prefer midrange, client/server, and network (LAN/WAN) background. At least 10+ years total MIS experience to include 5 years project management required. Some applications and technical background, project planning/control skills, and experience with data center consolidation are needed. **JOB CODE 950498.**

Senior Project Manager

You will plan, manage and implement needs for our Common Carrier products as well as provide business analysis and work proactively with customers in strategic planning. Requires 10+ years MIS experience, 5 years project management, and applications and technical knowledge. **JOB CODE 960650**

Project Manager - Item Level Tracking

You will provide project management, leadership and vendor management for the Ryder Dedicated Logistics Mobile Technologies Item Level Tracking projects. Working with other areas within the organization you will be responsible for developing this integrated scanner based technology. At least 5 years MIS project management and 10+ years MIS design or development required . Client service and object orientation experience and knowledge of scanners, hand held computers and wireless communications along with knowledge of logistics, vehicle technology and the transportation industry are essential. Some travel required. **JOB CODE 960519**

Senior Computer Systems Designer - Item Level Tracking

You will design, develop and support database for item Level Tracking System and develop (or coordinate development with outside vendor) code for handheld computer. At least 7 years of business systems background, 5 years in system analysis and 3 years in PC environment required. Background in database development, systems design and PC development are essential. **JOB CODE 960604**

Integration Consultant

You will lead and coordinate all technology architecture initiatives for the Ryder Dedicated Logistics business unit as well as coordinate with several development and planning groups to accomplish tasks assigned. At least 5 years of project management is required, along with systems background (technology, architecture/infrastructure engineering), and logistics. Warehouse management/MRP systems experience a must. **JOB CODE 950070**

Consultant, Computer Systems Designer

Project leader supporting payroll systems maintenance. Full software life cycle development experience required in a mainframe/financial systems environment. Strongly prefer payroll systems experience. Requires 4+ years mainframe and PC payroll systems knowledge, DB2, IMS, COBOL, TELON, EZTRIEVE+ and QMF skills. **JOB CODE 960507**

Senior Computer Business System Designer

You will provide overall technical direction of project to creatively implement DSS/EIS application in Ryder Dedicated Logistics field/HQ sites as well as develop detail analysis, design, construction and testing specs. Work closely with project team, vendors, and other MIS projects to ensure technical compatibility/integration, and perform platform software evaluations. Requires 3+ years PC Windows-based programming, 3 years client/server development, Windows NT, Windows 3.1/95, Visual Basic or Powerbuilder. Background in relational & multidimensional database design needed. **JOB CODE 950454**

Technology Consultant

This position will lead and coordinate the definition of Ryder's networks to include network design, technology platform selection, development of technology models and technology support for individual development efforts. At least 5 years network architecture and consulting experience and knowledge of Frame relay, ATM, SNA, TCP/IP, IPX/SPX, switched Ethernet and client/server architecture required. Excellent project management abilities and MS experience with Lotus Notes essential. Internet and Novell networks/communications preferred; AS/400 & UNIX a plus. **JOB CODE 960627**

Senior Systems Analyst

You will be involved with enterprise-wide computing platform technology assessment including operating systems, utilities and systems management tools, technology research, hardware/software integration in support of prototype development in a client/server environment. Requires at least 5 years systems architecture and integration, multiplatform architecture, UNIX, Windows NT, and project management. Experience with multiplatform environment including mainframe, midrange and UNIX systems needed. Network communications a plus. **JOB CODE 960628**

Senior Database Administrator

You will transfer data requirements into efficient data structure and access path, create, maintain, and tune database structures and provide assistance/support to systems group. Requires at least 8 years as a database administrator utilizing IMS, DB2 and other RDBMs. Analytical abilities and customer focus are critical. **JOB CODE 950326**

Consultant, Technical Support

You will provide Level III technical support for Ryder's enterprise data communications system, recommend, evaluate, install, customize and maintain network equipment and systems. This position is also responsible for all network problem management/resolution, and projections. Requires at least 5 years network support, 5 years in LAN/WAN technologies, and in-depth network problem/diagnosis tools. **JOB CODE 960518**

Senior Analyst

You will provide level II and level III technical support for the enterprise data communications system, and recommend, evaluate, install, customize and maintain network equipment/systems. You will also be responsible for network problem diagnosis and resolution, analyzing network configurations and designs, and recommend and implement changes for improved network availability. At least 3 years network support experience and 3+ years in project management required. Specialized training in network diagnostics and troubleshooting UNIX/AIX administration and RS/6000 experience preferred. **JOB CODE 950419**

Principal Technologist

Your focus will be on all facilities and equipment disposal and relocation for the district locations as they migrate to the Shared Services Center. You will also manage computer facilities buildout, supervising and directing contractors and vendors. Requires heavy business/technical and/or engineering background and 3 years in project management. Technical knowledge of MidRange (AS/400), 5250, and client/server products needed. Ability to manage multiple projects is necessary. **JOB CODE 960631**

Senior Data Administrator

You will provide long term planning and analysis of information needs, create and transform requirements into data models, and provide information support to business users, application developers and database administrators. Knowledge of various CASE tools and logical modeling required. **JOB CODE 950439**

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Computer Consultant: Consult with client companies at their site to determine their needs. Design, develop, adapt, install, & debug computer systems (herdware &/or software) as per needs of clients. Analyze & assist in implementation of new systems and troubleshoot any problems. Develop new system specifications, flow charts, write manuals, & train clients' employees in use of system. Software design may include use of such computer languages or software tools as: COBOL; ASSEMBLY, APS; CICS; CSP, ENDEAVOR, XMODS, DB 2. 40 hour work week; 9 am to 5 pm. Yrlyly salary: $45,000. Requires Bachelor degree in CompSc or CompEngTech and 2 years experience in job offered. Experience to include use of computer languages, & software tools as listed above. Must have proof of legal authonty to work permanently in the U.S. Send TWO copies of resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street-3 South, Chicago, Illinois 60605, Attention: James Gregory, Reference #V-IL-15326-Z. NO CALLS. AN EMPLOYER PAID AD.

PROGRAMMER/ANALYST: (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., $43,000/yr. Carry out program analysis, program design, coding and testing of computer software application systems under UNIX environment utilizing ORACLE and POWER BUILDER. Reqr. bachelor's degree in Computer Science or Electrical or Mechanical Engnrg. Reqr. 3 yrs. of expr. in job offered or related occupation or 3 yrs. in Systems Analysis &/or Programming &/or Computer Consulting &/or S/W Engrg. Reqr. work expr. in development of s/w systems on UNIX environment and with ORACLE and POWER BUILDER. Employer is a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 59696.

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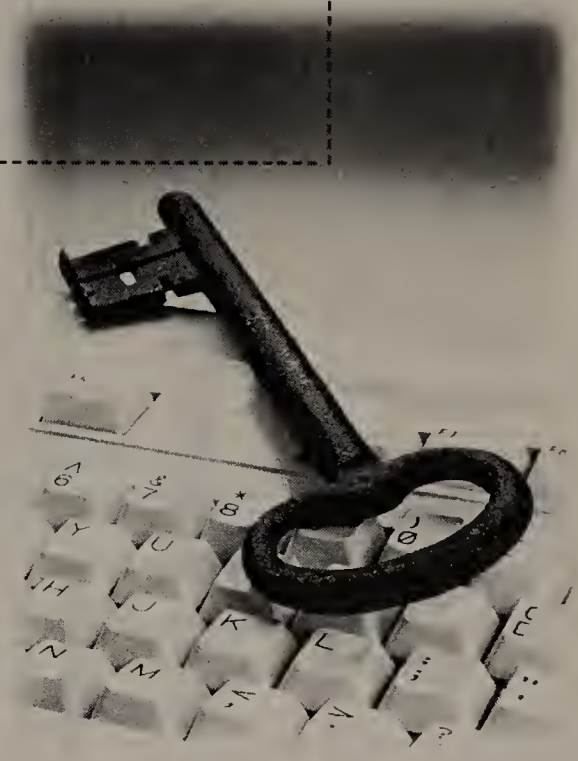

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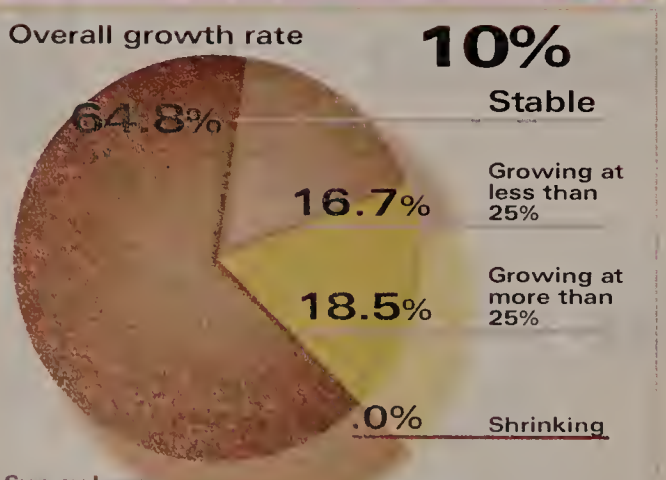

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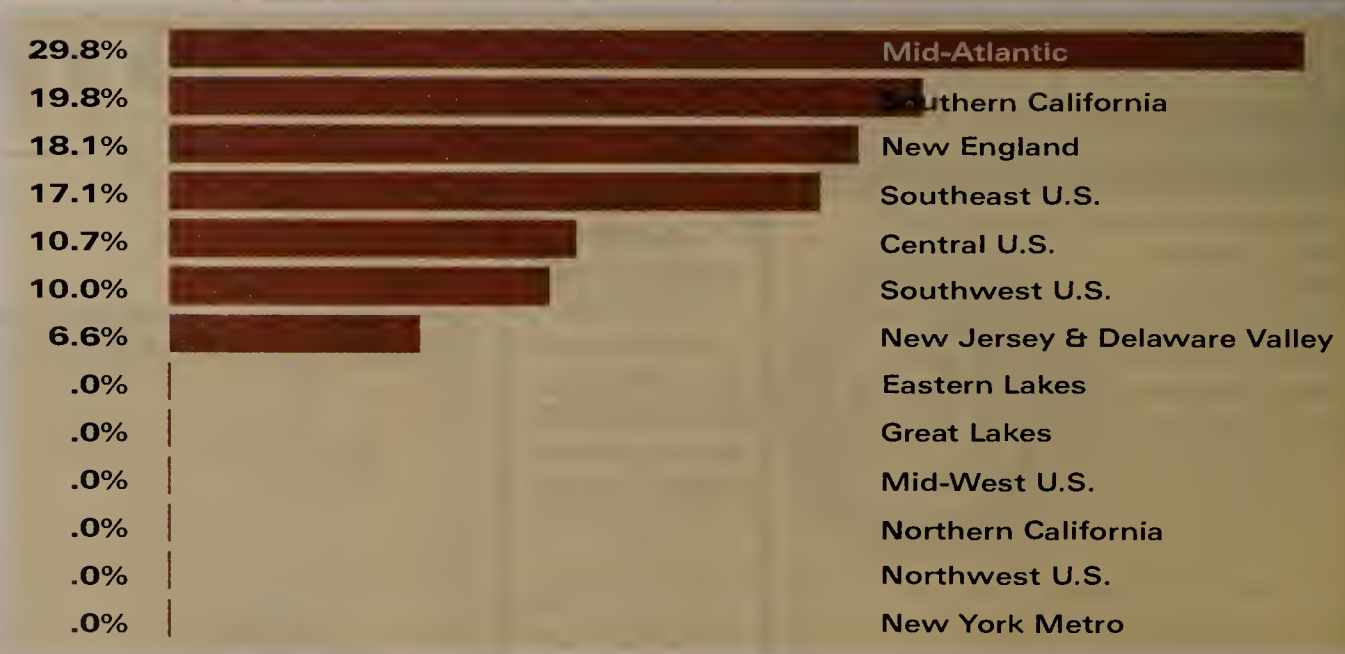

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 35,000 technology manufacturers. This survey relates to the 29,383 tracked firms with fewer than 1,000 employees.

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Marketplace

Slogging through alphabet soup

Networking really isn't such an ugly concept once you understand the basics. Here are some WAN-specific terms to help you act as interpreter for your manager.

By Alan Radding

When the talk turns to networking, information systems managers must forever face learning new sets of acronyms and concepts and trying to explain them to CEOs, chief financial officers and other executives.

IS managers may want to use the postal system as a metaphor to explain wide-area networks. To send a message electronically, the system has to stick it in an envelope (a packet or cell) with an address (the message header) on it. Routers act like postal stations along the route, reading address information and passing message packets along on their trip to the intended recipient.

In the following glossary, we examine some of today's hot concepts in WANs in an effort to help you explain them to your boss.

ISDN

Integrated Services Digital Network (ISDN) comes in two basic types, based on capacity: Basic Rate Interface (BRI) and Primary Rate Interface. BRI ISDN provides two 64K bit/sec. communication channels and one 16K bit/sec. signaling channel. Vendors' plans for using the signaling channel haven't materialized.

"ISDN is a 1980s technology that didn't have any real application," says Curtis Price, a research manager at International Data Corp., a market research firm in Framingham, Mass.

"Today, ISDN is viewed as inexpensive dial-up, digital bandwidth," says Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. You don't have to prearrange the digital connection as you do with other forms of digital telecommunication links, he says.

With the BRI ISDN channels providing a combined carrying capacity of about 128K bit/sec., ISDN essentially doubles the capacity of a typical leased line. But one problem with ISDN is the need to replace analog modems with digital connections to the telecommunications network. "The great installed base consists of analog modems. That's a big hurdle," Price notes.

"ISDN is most useful today for on-demand environments, and it can handle both voice and data traffic," says Charles Robbins, vice president of communications research at Aberdeen Group, Inc., a consultancy in Boston.

ATM

Not to be confused with banking's ubiquitous automated teller machines, ATM in telecommunications stands for Asynchronous Transfer Mode. ATM combines the reliability of circuit switching — such as the telephone company provides with regular telephone calls — with the efficiency of packet switching. It creates a virtual circuit and uses a fixed-size cell as the envelope into which any type of information can be inserted, which makes ATM very reliable and efficient.

"ATM is technology that lets you send voice, data and video traffic together over the same wire. Before ATM, people separated the different types of data on different networks," Price explains. ATM gives an immediate payoff through the consolidation of multiple networks. ATM currently is seen primarily as a backbone technology, but can be used for particular applications on the desktop, Robbins says. Other technologies, such as Fast Ethernet, rival ATM on the desktop. "ATM is inevitable for WAN use," Price says, because telephone service providers are adopting it.

Frame relay

Frame relay is a technology for transporting LAN data over a wide area, Price explains. It delivers fast, efficient performance by using a protocol that minimizes error-checking.

The appeal of frame relay is its low cost, Price says. Frame relay allows network managers to lease a specified amount of bandwidth to meet their company's normal needs yet accommodate bursts of activity above those needs at a nominal cost.

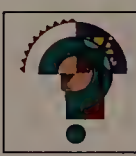
"Unlike ATM, frame relay is a proven, mature technology that is here today," Price says. He says almost $1 billion in frame-relay equipment was sold last year. Vendors are working on integrating frame relay with ATM, he says. The solution taking shape is the recently announced specification for a Frame-relay User Network Interface, which lets frame-relay hardware communicate with ATM networks.

FDDI

Fiber Distributed Data Interface (FDDI) is a standard for 100M bit/sec. LAN traffic. Using multiple rings with built-in healing and recovery capabilities, FDDI is a fiber-optic extension of traditional Token Ring LAN technology. For organizations with a high volume of LAN and WAN traffic, FDDI LANs connected by ATM WANs are emerging as an attractive, efficient option.

Top managers should look at the organization's communications needs, not at technology. "You have to know what your applications are and your usage before you start thinking about technology," Robbins says. ■

Radding is a freelance writer in Newton, Mass.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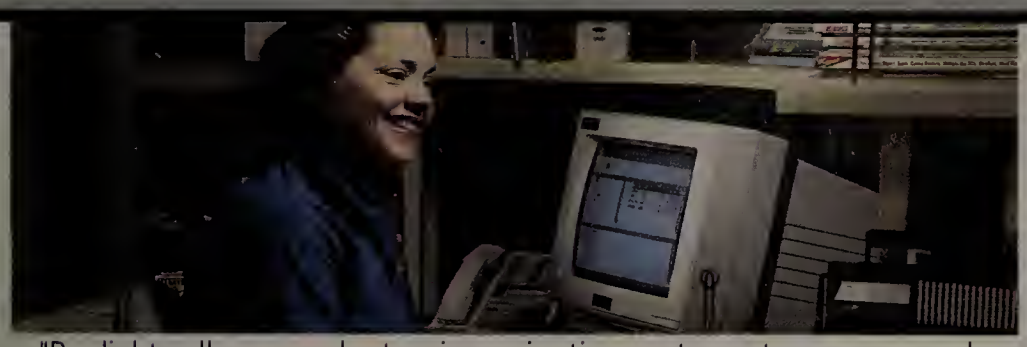

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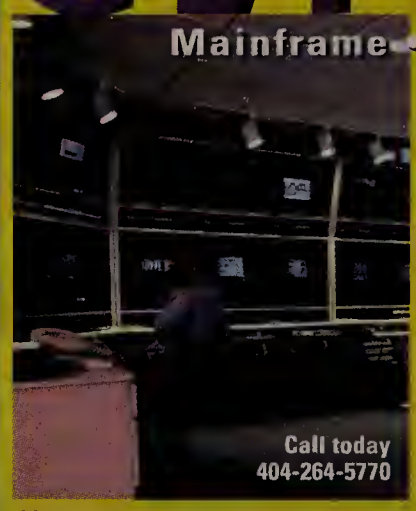

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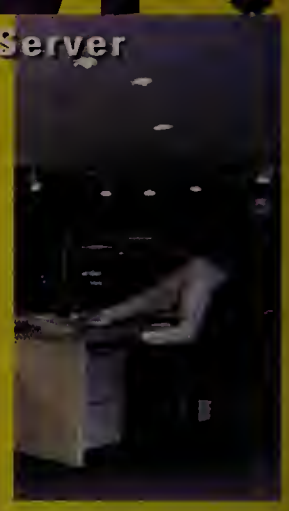

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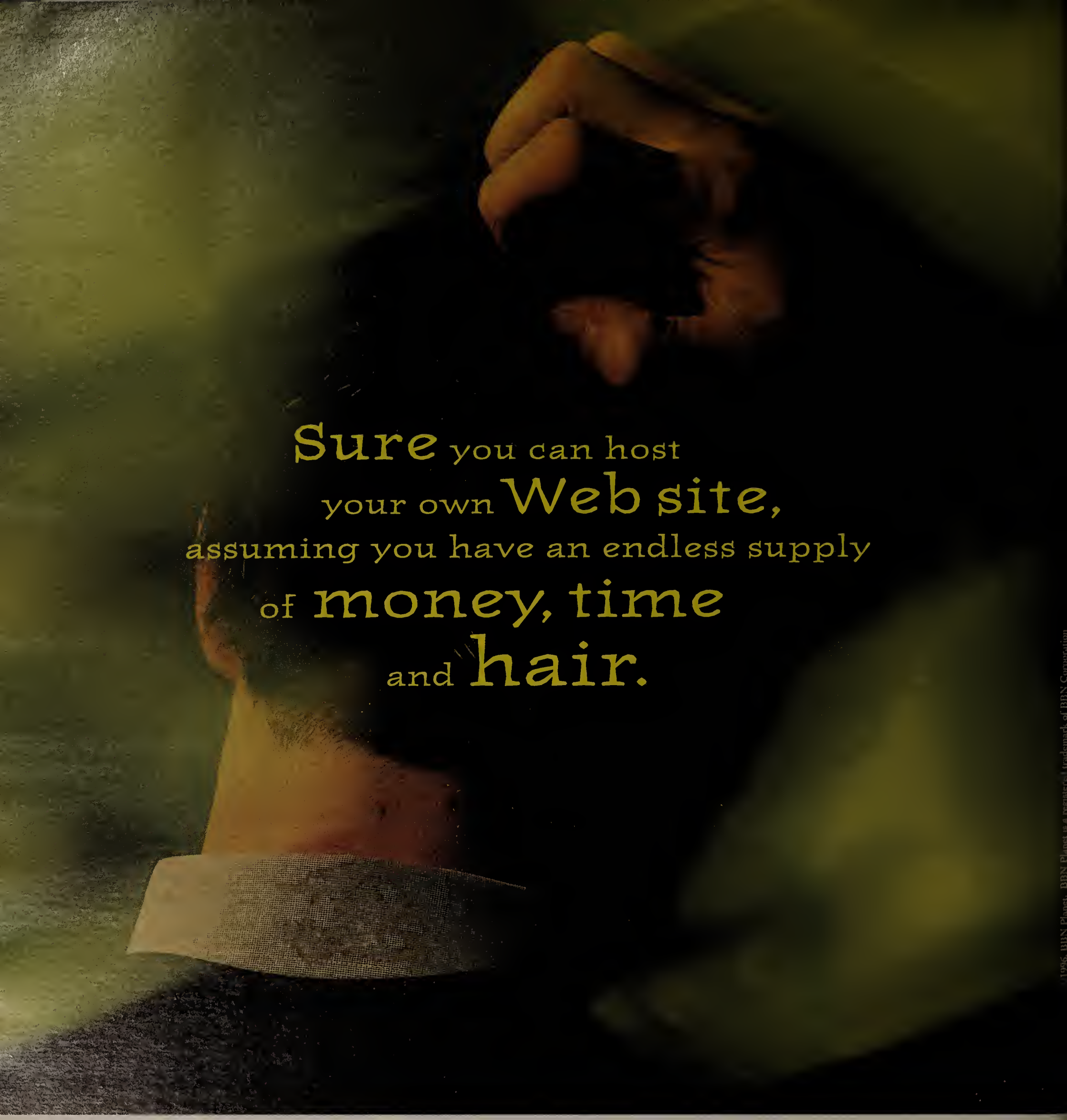

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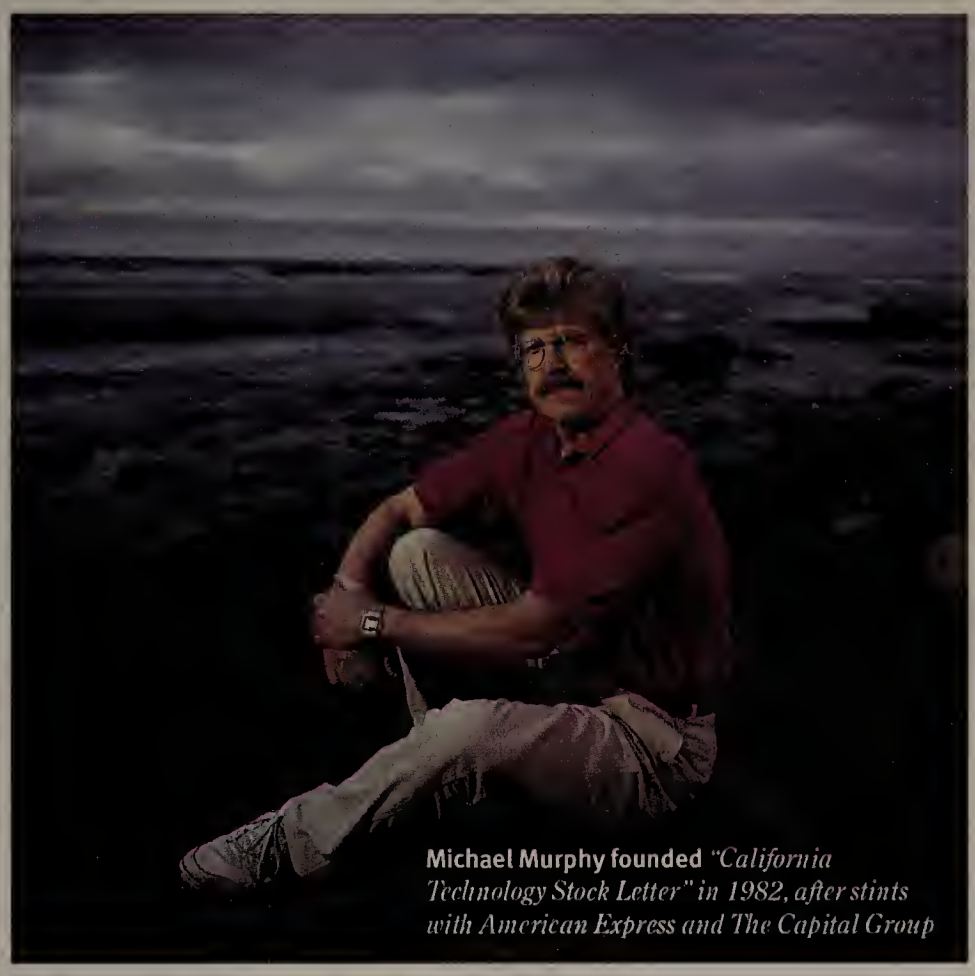

Michael Murphy founded *"California Technology Stock Letter" in 1982, after stints with American Express and The Capital Group*

COURT MAST

For more than 14 years, Michael Murphy has sifted through the Silicon Valley hype for the high-tech investment gems that Wall Street often overlooks. From his seaside headquarters in Half Moon Bay, Calif., Murphy packages and sells this insight in his highly respected "California Technology Stock Letter." Last year, Forbes *magazine ranked the publication No. 1 on its investment newsletter honor roll.*

Murphy recently discussed with staff writer Stewart Deck how he finds his high-tech treasures.

Q: What makes one technology company stand out from the others?

A: We look at the management, the dynamics of the market and the products. I think management is the most important factor. We also spend a lot of time looking at research and development. We will occasionally recommend a company that is not a high R&D spender, such as a PC manufacturer, but that's rare.

Q: How do you build R&D in to your investment equations?

A: We capitalize R&D because what really belongs to the shareholders is earnings plus R&D. The R&D is really being invested for the future benefit of the shareholders. We add R&D per share back into earnings per share. We call that growth flow. With this number, we can calculate price-to-growth-flow ratios and growth-flow return on equities, just as if it were an earnings number.

Q: What levels of R&D spending do you like?

A: We look for companies that spend more than 7% of their sales revenue on R&D. In addition, we look for sales growth of more than 15% a year, pretax margins of more than 15% and return on equity of more than 15%.

A lot of the companies perform far better than this. You can find companies that are growing 30% a year, reporting 20% pretax margins after they've spent 20% on R&D. These are real cash machines, committed to the virtuous circle — ship products at high margins and reinvest a significant chunk of that in R&D. That's how you build a Sun Microsystems, Inc. (Nasdaq:SUNW), a Hewlett-Packard Co. (NYSE:HWP) or an Intel Corp. (Nasdaq:INTC).

Q: How can you tell if a company is wasting R&D money?

A: Ask what percentage of its revenues this year comes from products developed in the last three years. If it isn't at least 50%, then the company probably isn't spending its R&D money productively.

Q: When has a stock fallen to a "cheap" level?

A: We look at the price-to-growth-flow ratio. Ten times growth flow is typical. Normally, we look for stock that's cheaper than eight times growth flow and especially down to around five times growth flow. You see that with Cirrus Logic, Inc. (Nasdaq: CRUS) right now.

Q: How long do you hold a stock?

A: We buy stocks that we believe will at least double within 12 to 18 months. Then we set target prices. We will re-evaluate a target price when we near it, but on the same criteria — namely, will we see it double in the next 12 months?

If a stock is on an uptrend and goes through our target, we set a stop loss price, usually trailing the current price by $2 to $3. If it falls back to the stop loss price, we sell it.

Q: What sectors do you favor now?

A: Because we think corporations are going to upgrade PCs this year, we're expecting a good year for PCs, semiconductors, data storage and semiconductor equipment.

Q: Can anyone with enough time and energy do what you do?

A: I've been watching these cycles in technology for 25 years, so some stories do start to sound familiar. But any smart person who focuses on this area has a huge advantage over all those people trying to make money in the old slow-growth economy.

This is a great area to follow. Most Wall Street analysts don't follow the new technology-based economy. Of the 7,500 mutual funds, there are only 30 technology funds.

It's practical for people to do their own research. We'll send a copy of our list of 80 great growth-flow companies to anyone on request. They can then look more closely into any of the companies they choose.

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ViewLogic Systems(H)	19.6
Platinum Software	18.2

DOLLAR

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Peoplesoft(H)	7.25
Ascend Communications(H)	6.88
Hewlett Packard Co.	6.25
Cascade Communications(H)	5.38
Shiva Corp.	5.25
Octel Communications Corp.	4.88
Cisco Systems Inc.(H)	4.75

Losers

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Sequoia Systems Inc.	-15.6
Manugistics Group Inc.	-14.9
Raptor Systems	-13.7
Logic Works	-13.1
Microcom Inc.	-10.8
Dataware Technologies Inc.	-10.7
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Industry Almanac

Dialing for dollars

With more people connecting to the Internet every day, you would think market-leading modem maker **U.S. Robotics, Inc. (Nasdaq:USRX)** would be on a roll. Yet analysts starkly disagree on how the company will fare.

John Grangaard, a senior analyst at GS2 Securities, Inc. in Milwaukee, rates the company as a strong buy.

"U.S. Robotics is the industry leader in almost every product line and market they're in," Grangaard says. "And we see them as a major player with new cable modems, as well." He predicts the stock price will rise another 40% in the next year and at least double within the next two years.

That, even though U.S. Robotics' stock price slipped 20% at the start of the year due to market worries that it had slow corporate sales and relied too much on sales of 14.4K bit/sec. modems, Grangaard notes (see chart).

The company began to change these perceptions — and the stock price began to rise — following the release of Pilot, U.S. Robotics' palmtop personal digital assistant, and the announcement of a cable modem marketing agreement with **Zenith Electronics Corp. (NYSE:ZE)**.

But David Tice, an analyst at David W. Tice & Associates in Dallas, predicts the stock will tumble. "We think U.S. Robotics is dramatically overvalued. There aren't many companies in the technology sector that can sell at seven times sales and 13 times book value for long." He adds that U.S. Robotics is in a commodity market, which is subject to strong pricing and margin pressures. Tice, who says slow PC sales also will hurt the company, rates the stock a sell.

"This has been a momentum-driven stock market lately, and U.S. Robotics has participated in the Internet craze," Tice says. "They would have to fall under $50 for us to look at them."

— Stewart Deck

Robotics leaps

Exch	52-Week Range			May 10 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 3.54%**
COMS	53.63	28.13	3 COM Corp.	48.00	2.38	5.2
AIT	66.88	42.25	AMERITECH Corp.	59.00	2.75	4.9
AXE	22.13	15.63	Anixter Intl.	18.25	-0.50	-2.7
APTS	14.50	2.75	Apertus Tech.	4.63	0.00	0.0
T	68.88	49.13	AT & T	61.13	2.13	3.6
ASND	65.63	8.13	Ascend Communications (H)	65.13	6.88	11.8
BNYN	18.63	6.00	Banyan Systems Inc.	8.75	0.38	4.5
BAY	50.00	22.88	Bay Networks Inc.	34.88	2.25	6.9
BEL	80.38	43.50	Bell Atlantic Corp.	65.00	2.50	4.0
BLS	45.88	29.13	Bellsouth Corp.	40.50	1.63	4.2
BRKT	49.00	9.13	Brooktrout Technology	44.00	1.50	3.5
CS	87.75	47.13	Cabletron Systems	73.88	1.63	2.2
CSCC	108.25	20.38	Cascade Communications (H)	107.13	5.38	5.3
CGRM	25.13	12.75	Centigram Communications	17.75	0.19	1.1
CSCO	55.00	20.75	Cisco Systems Inc. (H)	55.00	4.75	9.5
CLIX	11.38	4.50	Compression Labs Inc.	6.25	-0.38	-5.7
CMNT	12.75	4.00	Computer Network Tech.	6.75	-0.13	-1.8
XCOM	14.50	8.75	CrossComm	11.38	1.31	13.0
DIGI	64.00	21.88	DSC Communications	31.38	2.00	6.8
FORE	84.50	25.50	FORE Systems Inc. (H)	80.00	2.25	2.9
GDC	21.88	9.88	General Datacomm Inds.	13.63	-0.13	-0.9
GSX	42.50	28.00	General Signal Networks	38.75	-0.38	-1.0
GTE	49.25	31.88	GTE Corp.	45.00	2.63	6.2
LU	35.88	29.75	Lucent Tech.	34.25	0.38	1.1
MCIC	31.13	19.09	MCI Communications Corp.	29.00	0.06	0.2
MICM	14.00	5.50	MICOM Communications Corp. (H)	14.00	2.50	21.7
MNPI	34.50	9.13	Microcom Inc.	21.19	-2.56	-10.8
NETM	34.00	9.38	NetManage Inc.	14.50	0.25	1.8
NTRX	8.75	3.63	Netrix Corp.	7.00	-0.75	-9.7
NCDI	12.00	2.88	Network Computing Devices	3.00	0.00	0.0
NWK	42.00	21.00	Network Equipment Tech.	27.75	2.00	7.8
NETG	46.50	22.75	Network General	43.13	2.13	5.2
NN	67.25	25.00	Newbrioge Networks Corp. (H)	66.50	-0.25	-0.4
NT	52.50	31.50	Northern Telecom Ltd.	51.25	-0.13	-0.2
NOVL	23.25	11.38	Novell Inc.	14.00	-0.19	-1.3
NYN	59.25	39.25	Nynex Corp.	48.88	1.38	2.9
OCTL	50.50	21.13	Octel Communications Corp.	46.88	4.88	11.6
ODSI	43.25	17.00	Optical Data Systems Inc.	24.25	-0.50	-2.0
PAC	35.25	25.63	Pacific Telesis	34.13	0.63	1.9
PCTL	44.72	20.75	Picturetel Corp.	33.63	-0.13	-0.4
PTON	10.75	4.75	Proteon Inc.	5.75	0.13	2.2
RACO	7.88	3.88	Racotek Inc.	5.75	0.13	2.2
RETX	10.00	1.81	Retix	10.00	1.00	11.1
S8C	60.25	42.63	S8C Communications	50.50	0.88	1.8
SFA	23.38	11.38	Scientific Atlanta Inc.	18.75	0.50	2.7
SHVA	64.50	18.13	Shiva Corp.	63.50	5.25	9.0
FON	45.50	29.25	Sprint Corp.	42.13	0.38	0.9
SMSC	23.50	12.50	Standard Microsystems Corp.	16.75	-0.13	-0.7
STRM	54.75	17.25	Stratacom Inc. (H)	54.75	3.75	7.4
TBIT	10.50	2.38	Telebit Corp. (H)	9.75	1.88	23.8
USRX	177.75	36.13	US Robotics (H)	177.25	17.50	11.0
USW	48.38	28.38	US West Inc.	33.75	1.25	3.8
XIRC	17.50	8.88	Xircom (H)	16.00	-0.50	-3.0
XYLN	73.50	51.25	Xylan Corp.	67.50	4.00	6.3
PCs and Workstations						**UP 0.00%**
AALR	9.63	5.00	Advanced Logic Research	7.63	0.13	1.7
AAPL	50.13	23.00	Apple Computer Inc.	26.38	2.88	12.2
ASTA	19.13	4.63	AST Research Inc.	7.00	0.25	3.7
CPQ	56.75	35.88	Compaq Computer Corp.	46.25	-0.88	-1.9
DELL	49.38	23.00	Dell Computer Corp.	44.88	-0.38	-0.8
GATE	40.75	17.38	Gateway 2000 Inc.	36.13	1.25	3.6
HWP	112.38	64.13	Hewlett Packard Co.	108.75	6.25	6.1
MUEI	29.88	9.00	Micron International Inc.	13.00	-0.50	-3.7
NIPNY	75.13	51.00	NEC America	60.50	-2.88	-4.5
SGI	45.63	21.13	Silicon Graphics	27.63	-0.63	-2.2
SUNW	59.13	19.75	Sun Microsystems Inc. (H)	56.50	-1.00	-1.7
Large Systems						**UP 2.44%**
AMH	13.63	6.75	Amdahl Corp.	11.25	-0.63	-5.3
DGN	19.13	7.13	Data General Corp.	14.38	-0.50	-3.4
DEC	76.50	35.13	Digital Equipment Corp.	54.00	-2.63	-4.6
IBM	128.88	83.13	IBM	107.50	-0.38	-0.3
MDCD	18.50	3.00	Meridian Data Inc.	16.31	-0.94	-5.4
NETF	7.50	3.88	NetFrame	4.63	0.25	5.7
SQNT	25.38	10.13	Sequent Computer Sys.	14.25	0.38	2.7
SEQS	10.00	2.88	Sequoia Systems Inc.	3.38	-0.63	-15.6
SRA	36.13	23.00	Stratus Computer Inc.	27.38	-0.50	-1.8
TDM	17.50	8.38	Tandem Computers Inc.	13.00	0.00	0.0
TRCD	6.88	2.00	TriCord Systems (H)	6.88	2.00	41.0
UIS	13.63	5.50	Unisys Corp.	7.13	1.00	16.3
Software						**UP 1.47%**
ADBE	74.25	30.00	Adobe Systems Inc.	40.00	-1.13	-2.7
AMSWA	8.75	3.50	American Software Inc.	5.13	-0.25	-4.7
APLX	42.50	8.25	Applix Inc.	35.50	0.88	2.5
ARSW	82.75	28.75	Arbor Software	64.25	1.25	2.0
ACAD	53.00	27.75	Autodesk Inc.	40.75	-1.25	-3.0
BACH	11.88	4.63	Bachman Info. Systems	8.88	-0.25	-2.7
BGSS	42.00	28.50	BGS Systems Inc.	35.13	2.88	8.9
BMCS	65.50	29.75	BMC Software Inc. (H)	64.88	3.13	5.1
BOOL	26.50	19.25	Boole and Babbage (H)	25.00	-0.50	-2.0
BORL	21.25	8.75	Borland Int'l Inc.	16.00	0.00	0.0
BOBJY	104.25	30.50	Business Objects	92.25	2.00	2.2
CYE	27.88	12.38	Cheyenne Software Inc.	19.75	0.50	2.6
COGNF	68.50	24.00	Cognos Inc.	65.00	1.50	2.4
CA	76.50	37.25	Computer Associates	74.00	1.88	2.6
CVN	15.50	4.88	Computervision Corp.	12.50	0.25	2.0
CPWR	36.00	15.50	Compuware Corp.	28.25	-0.63	-2.2
CSRE	28.50	10.88	Comshare Inc. (H)	27.25	-0.50	-1.8
COSFF	19.50	8.38	Corel Corp.	11.25	0.38	3.4
DWTI	15.75	5.75	Dataware Technologies Inc.	6.25	-0.75	-10.7
DSLGF	32.25	8.63	Discreet Logic Inc. (L)	8.63	-0.75	-8.0
FILE	67.00	30.25	Filenet Corp.	53.25	-0.25	-0.5
DDDDF	8.25	3.38	4th Dimension	5.75	-0.50	-8.0
FTPS	40.63	8.13	FTP Software Inc.	9.50	-0.63	-6.2
GSOF	26.00	7.00	Group I Software	10.00	1.50	17.6
GPTA	11.13	4.13	Gupta	4.75	0.00	0.0
HUM	28.88	17.00	Hummingbird Comm. Ltd.	23.88	0.00	0.0
HYSW	28.38	9.75	Hyperion Software Corp.	13.13	-0.25	-1.9
IRIC	18.63	10.00	Information Resources	13.94	0.44	3.2
IFMX	36.75	16.88	Informix Corp.	23.75	-1.38	-5.5
INGR	20.13	10.00	Intergraph Corp.	13.63	0.88	6.9
LEAF	12.63	4.63	Interleaf Inc.	8.00	-0.25	-3.0
ISLI	26.25	8.75	Intersolv Inc.	10.44	-0.56	-5.1
INTU	89.25	29.63	Intuit Inc.	52.50	-0.63	-1.2
LGWX	22.25	10.88	Logic Works	14.13	-2.13	-13.1
MANU	20.50	9.50	Manugistics Group Inc.	14.25	-2.50	-14.9
MAPS	40.00	10.00	MapInfo Corp.	15.75	2.25	16.7
MATH	9.25	2.75	MathSoft	7.88	0.63	8.6
MCAF	65.75	18.13	McAfee Associates (H)	58.88	-1.88	-3.1
MENT	22.88	10.88	Mentor Graphics	16.50	0.75	4.8
MIFGY	21.25	8.25	Micro Focus	13.50	-0.88	-6.1
MGXI	17.25	6.00	Micrografx Inc.	16.88	0.88	5.5
MSFT	115.25	78.88	Microsoft Corp. (H)	115.00	4.38	4.0
ORCL	36.75	20.38	Oracle Corp.	34.00	1.06	3.2
PMTC	42.75	20.88	Parametric Technology	42.00	2.00	5.0
PARQ	14.50	6.63	ParcPlace Systems Inc.	9.88	0.75	8.2
PSFT	69.00	24.38	Peoplesoft (H)	69.00	7.25	11.7
PTEC	18.75	7.63	Phoenix Technologies (H)	17.44	0.69	4.1
PSQL	16.88	3.13	Platinum Software	11.38	1.75	18.2
PLAT	26.00	11.25	Platinum Technology	15.00	0.00	0.0
PRGS	38.00	14.63	Progress Software Corp.	15.38	-0.25	-1.6
RNBO	26.75	16.63	Rainbow Technologies Inc.	21.50	1.38	6.8
RED8	61.00	29.50	Red Brick Systems Inc.	48.75	-3.25	-6.3
ROSS	7.75	2.19	Ross Systems	6.00	1.00	20.0
SCOC	13.25	5.50	SCO Inc.	9.00	0.88	10.8
SDTI	91.50	16.50	Security Dynamics Tech. (H)	84.50	-3.00	-3.4
SKEY	51.75	13.38	Softkey International Inc.	27.75	-0.13	-0.4
SPCO	5.13	2.19	Software Publishing Corp.	2.44	0.00	0.0
SQAX	35.00	16.00	SQA Inc.	30.25	0.00	0.0
SOTA	16.88	6.63	State of the Art (H)	16.13	0.63	4.0
SSW	78.13	33.25	Sterling Software Inc. (H)	76.00	0.00	0.0
SDRC	37.38	10.38	Struct. Dynamics Research	27.50	-2.88	-9.5
SYBS	39.75	20.88	Sybase Inc.	26.31	0.44	1.7
SYMC	33.25	9.88	Symantec Corp.	14.75	-1.13	-7.1
SNPS	43.75	23.00	SynOpsys (H)	43.75	3.75	9.4
SSAX	30.63	12.63	System Software Assoc.	24.31	0.69	2.9
SYSF	29.75	8.75	Systemsoft Corp. (H)	27.25	1.00	3.8
TRUV	10.13	4.00	Truevision Corp.	8.63	-0.38	-4.2
VIEW	17.00	9.63	ViewLogic Systems (H)	16.75	2.75	19.6
VMRK	21.50	5.75	VMark Software Inc.	10.50	1.13	12.0
WALK	12.75	4.63	Walker Interactive Systems	11.13	-0.13	-1.1
WALL	23.25	13.00	Wall Data Inc.	19.63	0.75	4.0
WANG	26.13	12.38	Wang Laboratories Inc.	23.63	-0.25	-1.0
Internet						**OFF 3.08%**
AMER	71.00	16.75	America On-Line (H)	59.25	-3.00	-4.8
BBN	48.75	16.50	BBN Corp.	27.00	-0.75	-2.7
CSRV	35.50	25.00	Compuserve Corp. (L)	25.75	-0.75	-2.8
LCOS	29.25	14.00	Lycos Inc.	17.38	0.88	5.3
NETC	91.50	19.22	Netcom On-Line	35.56	-2.94	-7.6
NSCP	87.00	22.88	Netscape Comm. Corp.	59.13	2.50	4.4
PSIX	29.00	6.75	PSINet	15.75	-1.25	-7.4
QDEK	39.50	6.44	Quarterdeck Corp.	14.88	-0.25	-1.7
RAPT	39.25	22.75	Raptor Systems	28.25	-4.50	-13.7
SCUR	64.50	19.00	Secure Computing Corp.	25.00	-1.50	-5.7
SPYG	61.00	13.25	Spyglass Inc.	29.75	-1.50	-4.8
UUNT	98.75	21.75	UUNET Tech.	63.19	1.19	1.9
YHOO	43.00	24.50	Yahoo! Inc.	31.25	-0.75	-2.3
Semiconductors						**OFF 2.09%**
AMD	39.25	16.13	Advanced Micro Devices	18.38	-1.13	-5.8
ADI	30.13	17.50	Analog Devices Inc.	27.88	0.13	0.5
CHPS	15.88	7.88	Chips and Technologies	10.88	-0.88	-7.4
CRUS	61.13	17.00	Cirrus Logic	20.75	-1.13	-5.1
CY	27.75	10.00	Cypress Semiconductor Corp.	13.38	-0.63	-4.5
CYRX	49.75	18.25	Cyrix	29.13	0.38	1.3
INTC	78.38	49.81	Intel Corp.	69.25	0.88	1.3
LSI	62.50	22.50	LSI Logic Corp.	34.38	-1.88	-5.2
LSCC	43.00	26.38	Lattice Semiconductor	33.94	0.19	0.6
MCRL	32.50	12.25	Micrel Semiconductor Inc.	15.00	-0.75	-4.8
MU	94.75	27.50	Micron Technology	33.13	-3.50	-9.6
MOT	82.50	44.75	Motorola Inc.	60.75	-1.25	-2.0
NSM	33.63	13.50	National Semiconductor	16.13	0.00	0.0
TXN	83.75	42.75	Texas Instruments	53.00	-3.50	-6.2
TXCC	17.63	7.88	TranSwitch Corp. (H)	17.63	0.50	2.9
VLSI	39.13	10.75	VLSI Technology	17.13	-0.63	-3.5
WWTK	6.88	1.00	Weitek	1.44	-0.06	-4.2
WDC	26.50	14.38	Western Digital Corp. (H)	25.50	0.75	3.0
XLNX	55.50	23.25	Xilinx	34.88	-0.75	-2.1
ZLG	54.13	28.50	Zilog Inc.	37.25	-0.38	-1.0
Peripherals and Subsystems						**UP 1.98%**
APCC	25.88	7.88	American Power Conversion	12.25	-0.25	-2.0
ADPT	61.00	29.25	Adaptec Inc.	57.50	-0.63	-1.1
CBEX	13.13	5.00	Cambex Corp.	7.13	1.38	23.9
CGN	7.25	3.06	Cognitronics Corp.	4.94	0.06	1.3
CREAF	14.13	5.75	Creative Technologies Inc.	7.00	0.00	0.0
RACE	13.13	3.63	Data Race Inc.	4.50	-0.38	-7.7
DTM	9.38	4.13	Dataram Corp.	6.25	-0.19	-2.9
EMC	27.38	13.00	EMC Corp.	20.88	0.50	2.5
EMLX	28.50	6.38	Emulex Corp.	16.75	-0.25	-1.5
ESCC	29.00	13.00	Evans and Sutherland	24.50	-1.56	-6.0
EXBT	20.13	10.00	Exabyte (H)	20.13	1.19	6.3
IISLF	4.25	1.50	Intelligent Info. Systems	2.00	0.00	0.0
IOMG	69.88	4.50	Iomega Corp. (H)	63.13	4.25	7.2
IPLSA	7.88	2.50	IPL Systems Inc.	5.88	-0.63	-9.6
KMAG	37.50	18.75	Komag Inc.	33.38	0.38	1.1
MTSI	34.25	11.25	Micro Touch Systems Inc.	20.00	0.88	4.6
PEAK	34.75	16.75	Peak Technology Group	26.00	2.00	8.3
PNCL	19.75	5.88	Pinnacle Micro Inc.	7.38	-2.88	-28.0
PTNX	38.75	13.50	Printronix Inc.	22.31	2.06	10.2
AQM	6.75	3.25	QMS Inc. (H)	6.13	0.13	2.1
QNTM	28.50	15.88	Quantum Corp.	22.88	0.75	3.4
RDUS	14.00	0.94	Radius Inc.	4.00	0.44	12.3
SEG	67.75	32.38	Seagate Technology	56.25	-0.88	-1.5
STK	32.50	20.25	Storage Technology	32.13	2.25	7.5
STLC	7.81	1.25	Streamlogic Corp.	7.81	1.56	25.0
TEK	61.88	29.75	Tektronix Inc.	38.13	-0.88	-2.2
XRX	153.00	109.38	Xerox Corp. (H)	151.13	0.50	0.3
Services						**UP 0.99%**
AMSY	28.63	13.88	American Mgmt. Systems (H)	28.63	2.00	7.5
ANLY	41.50	24.75	Analysts Int'l (H)	40.00	0.25	0.6
AUD	43.38	30.25	Auto Data Processing	37.00	-0.38	-1.0
CATP	71.50	30.75	Cambridge Tech. Partners	68.25	3.50	5.4
CEN	50.00	31.63	Ceridian Corp.	48.63	1.38	2.9
CDO	26.00	18.88	Comdisco Inc. (H)	26.00	1.25	5.1
CHRZ	53.00	8.00	Computer Horizons (H)	51.38	0.25	0.5
CSC	80.75	47.00	Computer Sciences	71.75	-1.13	-1.5
TSK	31.88	10.75	Computer Task Group	28.25	-2.25	-7.4
CPU	37.25	12.13	CompUSA Inc. (H)	37.25	1.38	3.8
CDAT	27.50	8.63	Control Data Systems Inc. (H)	25.13	0.75	3.1
EGGS	14.25	5.00	Egghead Discount Software	11.06	0.19	1.7
GME	58.00	41.00	General Motors E (EDS)	53.75	-2.50	-4.4
INAC	22.63	9.13	Inacom Corp. (H)	20.63	-1.00	-4.6
INEL	14.63	3.50	Intelligent Electronics	9.63	0.50	5.5
KEA	40.13	18.25	Keane Inc.	40.13	1.50	3.9
MSEL	8.38	2.25	Merisel	4.25	0.25	6.3
MICA	15.00	7.25	Microage Inc.	11.88	0.00	0.0
PAYX	70.50	28.75	Paychex	66.25	-1.63	-2.4
PMS	54.25	42.63	Policy Management Sys.	52.63	1.63	3.2
REY	47.00	27.00	Reynolds and Reynolds	46.25	-0.63	-1.33
SCBI	26.75	15.75	SCB Computer Tech. Inc. (H)	26.25	0.25	0.96

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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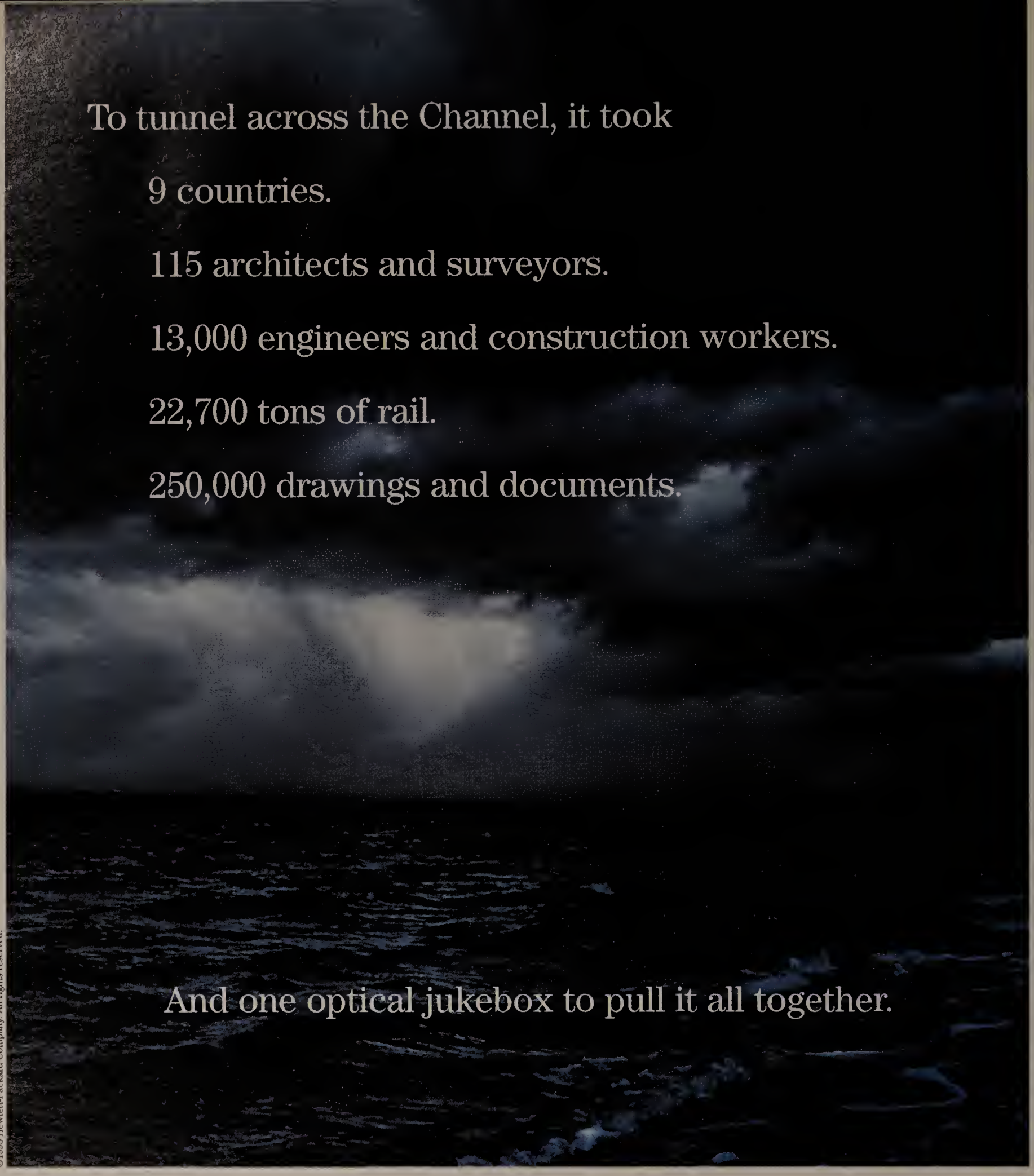

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Dear Bob... listen up

"Novell should revamp its server-based licensing policy. We paid double the fees to let users access NDS resources on separate servers."

– Rick Shope, manager of PC planning and technology, Nations Banc-CRT, Chicago

"Novell must convert themselves from a [network operating system] vendor to a network services company; they say they're doing that but it's bullshit."

– Tom Kucharvy, president, Summit Strategies

"Novell must articulate its long-term goals and how it plans to execute its strategy. Is it a [network operating system] vendor or [network operating system] services company? NetWare isn't the product to make Novell the leader in the 21st century."

– Jamie Lewis, president, The Burton Group

"Novell should be giving NDS away to [independent software vendors] to make it the directory of choice. They also need to ship a shrink-wrapped version of NDS for Windows NT Server and expand their relationships beyond HP and SCO."

– Jon Oltsik, analyst, Forrester Research

Add your comments on Novell to our whiteboard at http://www.computerworld.com

Novell

CONTINUED FROM PAGE 1

focus. "No company that has 65% of the installed base is dead in the water," noted Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass.

But users and analysts agreed that Novell must prove that the waffling and detours of the past two years are over and that the latest realignment is for real. Even more daunting and perhaps impossible: Novell must find a way to blunt NT Server's soaring momentum.

Novell is taking its best shot by extending its core Novell Directory Services (NDS) to run on multivendor platforms, starting with Windows NT. The caveat: Novell won't announce a delivery timetable for NDS on NT until at least this summer. "Until [then], it's still projectorware. After two years of broken promises, users are more than a little skeptical," said Tom Kucharvy, president of Summit Strategies, Inc. in Boston.

Novell is scoring points for effort. Jamie Lewis, an analyst at The Burton Group in Salt Lake City, said, "Novell is right on target with its Internet initiatives, like the support for Java and its decision to unbundle NDS to run on NT."

The lingering cloud on the company's horizon is the need for a clearly delineated long-term strategy. Novell has one, but users and analysts find it murky.

For example, Lewis said Novell hints that NDS will be cross-platform but hasn't defined how it will move to a business model based on services rather than NetWare, "whose days are clearly numbered."

The immediate threat, however, comes from Microsoft Corp.'s Windows NT Server 3.51, which has mounted the most serious challenge to NetWare's market lead. Novell has suffered several major defections to NT Server — most notably Chevron Corp., Sun Oil Co. (Sunoco) and Stone Container Corp. A study by International Data Corp. in Framingham, Mass., predicts NT Server will surpass NetWare as market leader, with more than 1.5 million units shipped by the year 2000.

While some observers chide NT for being resource-hungry and less than security-conscious, other users cite the lure of its momentum and a belief that since Microsoft owns the desktop, it makes sense to have a well-integrated networking front and back end.

That's the case for a vice president of computer operations at a major stock exchange. "We see too many footsteps marching in the direction of NT Server, and we don't want to buck the flow," he said.

In the long term, Novell must execute its Internet plan and counter the threat of intranet servers. Should these offer network file-and-print capabilities in the future, Novell "will lose everything" if it fails to differentiate itself, Oltsik said.

Frankenberg sharply disagreed. He contends Novell is one of the leading Internet vendors with "over $100 million" in Internet-related product sales in the past year. There is nothing nebulous about Novell's forthcoming Smart Global Network/Internet model, he said. This client/network services model consists of these three initiatives:

- Bundling Sun Microsystems, Inc.'s Java server into every copy of NetWare 4.1 and applet development tools.
- Building electronic commerce capability via Open Market's OM-SecureLink.
- Providing Net2000 application programming interfaces.

Novell hasn't released specific ship dates but said most of these features will ship within a year.

Analysts give Novell six to 12 months to establish a beachhead.

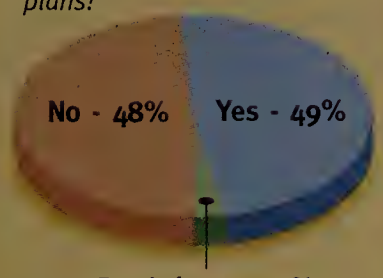
"If Novell doesn't reassert itself this year with bold initiatives ... [and] keep pace ... it will be in deep trouble," Lewis warned.

Staff writer Stewart Deck contributed to this story.

Users are almost evenly split as to their migration plans . . . .

COMPUTERWORLD User Pulse EXCLUSIVE SURVEY

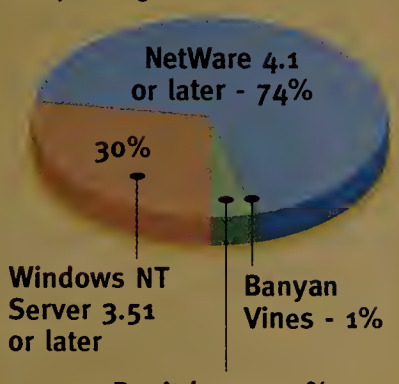
Do you have any network operating system migration plans?



BASE: 100 NOVELL NETWARE USERS

. . . Most will stick with NetWare, but NT is gaining ground.

When you upgrade your network, which network operating system will you migrate to?



BASE: 77 RESPONDENTS; MULTIPLE RESPONSES ALLOWED

Frankenberg unplugged

Computerworld *Senior Editor Laura DiDio queried Novell President and CEO Robert Frankenberg on several key topics:*

On persistent rumors that Novell is acquisition bait: "That's utterly untrue. In the two years I've been here, we've never talked with anyone about buying Novell."

On intranet and Internet Web servers obsoleting NetWare file servers: "On the contrary. There are 3.3 million NetWare servers, and it makes enormous sense to put intranet and Internet servers on top of the [existing] structure — NetWare. You simply add a piece of software to turn an existing NetWare server into an Internet Web server. It's inexpensive [$895], easy to manage, and it's shipping now."

On Novell's Smart Global Network strategy: "Our strategy to embrace an open architecture that gives users a Universal client, a Universal network and Universal services is among the most comprehensive in the industry. That gives users guaranteed quality of service, a secure infrastructure for the next generation of application servers and easy access to organized information anywhere on the enterprise."

On the threat from Windows NT: "A [network operating system] is a great deal more than file-and-print. I still view NT as an applications server and *not* a network operating system.

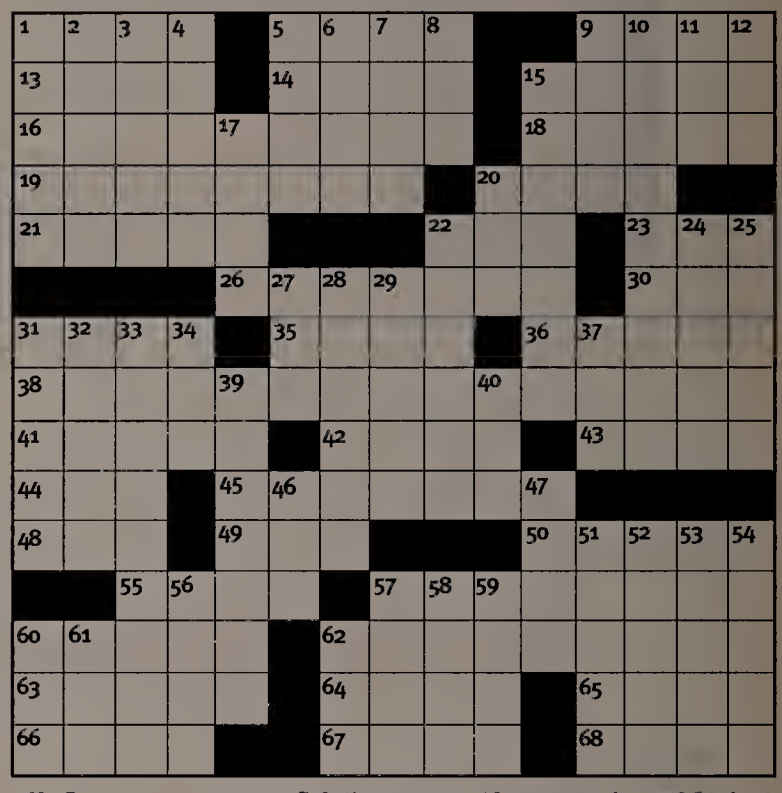
"NT badly needs directory services. We intend to deliver a timetable for availability of NDS running on top of NT Server by the summer."

On NetWare 4.1 unit shipment growth: "NetWare 4.1 accounted for 58% of all NetWare shipments in the first quarter; two-thirds of that was new business. Overall, 75% of all NetWare 3.x and 4.1 servers shipped last year were new servers."

Dream team 1996!

Computerworld crossword by Rick Bennett

If these high-tech moguls got together to focus on a common goal, do you think the world would ever be the same?



No. 7 Solution on page 16 rbennet9@tcd.net

ACROSS

1 Without (French)
5 Cheeselike food made of curdled soybean milk
9 Cut into cubes
13 Floating ice
14 Throw forcefully
15 John Wayne movie, perhaps
16 Archenemy of 38 ACROSS
18 The state of being united
19 An also-ran retrofit to compete with Java
20 __ "The Man" Musial
21 Rush Limbaugh supporter, with head
22 German article
23 Doctor of Education
26 Type of mat
30 Regret
31 Reproductive structures
35 A bottle that contains a drug
36 Commit to memory
38 CA/Netscape/Oracle dynamos, or just three stooges?
41 Forearm bones
42 Arse
43 Shag rugs
44 Base-T
45 Mooched
48 Prefix indicating near
49 Diego, Francisco or Anselmo
50 Muslim leaders
55 College mover and shaker, for short
57 Free agent, now
60 Step
62 IBM head, et al
63 Inhabitants of Lithuania, Latvia, or Estonia
64 Element
65 South American Indian
66 A standard
67 Disk purchaser's dream, for short
68 Bucket

DOWN

1 Bay-area short, for short
2 A way to explain
3 Compiler switch, abbr.
4 Anagram of cslet
5 One Southeast Asian
6 Ut or atient preceeder
7 Worry
8 Safety approval stickers, for short
9 __ Carvey, comedian
10 Travel list
11 Former title of 57 ACROSS, for short
12 Grayish-brown eagle
15 What 16 ACROSS does to 38 ACROSS
17 Goal of all this week's superstars
20 Fighter pilot's nightmare, for short
22 Clinton is both for and against?
24 Sorghums of dry regions of Asia and N. Africa
25 Disavows, var.
27 First woman
28 European capital
29 Louisiana cooking
31 Ending in a sharp point
32 Pull along, in New York City
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34 Terrorist org.
37 Auricle
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46 Campaign contributing org.
47 Force
51 Doctor's swig, for short?
52 G follower, also known as PbS
53 French thanks
54 DBMS field for 4th-year student's wage?
56 Predatory Japanese org.
57 Proj. to look for aliens
58 SW
59 Systems or doctrines
60 I'm-from-the-government-and-here-to-help-you org.
61 Result of soaking up some rays
62 Prevent from speaking

Inside Lines

Microsoft gives nod to ADSL

Microsoft plans to support a telephone carrier transmission technology that promises to transform regular twisted-pair wire into high-bandwidth pipes for user sites and homes. The software giant will announce an agreement with modem maker Westel Technologies in Oswego, Ill., to develop Asymmetric Digital Subscriber Lines (ADSL). Carriers said they will use ADSL to deliver video, Internet access and remote LAN access services.

Oracle to license Lucent system

Oracle plans to license Lucent Technologies' Inferno operating system for use in its prototyped-but-unproduced Internet device, according to a source briefed by Oracle. Sun and IBM may also endorse Inferno for similar devices, the source said. But none of the vendors has picked a hardware maker to build the systems.

Microsoft to ship 200,000 NT betas

Microsoft this week will release 200,000 beta copies of its Windows NT Workstation 4.0 release to users and software developers. NT 4.0, which is slated to ship in volume this summer, includes the long-awaited Windows 95 graphical user interface.

Wags go wireless

Wireless technology is going to make it easier for those pesky reporters to chase down delegates and politicians at the upcoming Republican convention in San Diego in August. Pacific Bell Mobile Services will provide a select group of scribes with IBM ThinkPads and Nokia handsets for wireless Internet access, fax transmission and corporate server access via Personal Communications Services. The lucky few will be trained on the loaned devices and then billed airtime charges of 15 cents a minute, plus long-distance charges.

Strange bedfellows

There's no love lost between Sun Microsystems and Silicon Graphics. For example, a recent promotional video from Sun featured Scott McNealy and other executives kicking SGI boxes off a Silicon Valley roof. But sources said the rivals are discussing a deal for Sun to take over the SPARC-based CS6400 high-end commercial server developed by Cray Research. Cray is being acquired by SGI.

The 5th Wave by Rich Tennant

Unisys first on the bus

When Unisys takes the wraps off its new line of Aquanta PC portables, desktops and servers this week, it will become the first vendor to offer systems with the Universal Serial Bus (USB). The USB is expected to eventually replace the printer, mouse and keyboard ports on the back of PCs. Other vendors expect to offer the USB later this year.

Bay watch continues

Bay Networks Tuesday will announce a sweeping reorganization in which the internetworking vendor will be broken into several independent business units, including enterprise, workgroup and Internet service. A Bay spokeswoman confirmed the plan but wouldn't provide additional details. A source close to Bay said there will be no changes in senior management.

Did I say that?

At the Object World trade show last week in Boston, one attendee was taken aback when he asked a Digital marketer about the state of the company's relationship with Microsoft. "It's about as good as the relationship between Paula Jones and Bill Clinton," the marketer snarled, then paused. "Oh, did you mean Digital? I thought you said, 'Sun.'"

If you have something to say to news editor Tish Keefe, she can be reached at (508) 820-8183 or via the Internet at patricia_keefe@cw.com.

THE FUTURE FOR SOFTWARE DEVELOPERS HAS JUST BEEN UPGRADED FROM HOT TO EXTRA HOT

On March 26th, the world of software development tools got its first taste of the future. Cayenne.

Cayenne Software combines the leadership in data-driven modeling and database design of Bachman Information Systems, Inc. and the leadership in structured and object-oriented modeling resident in Cadre Technologies, Inc. Together, they generated revenues of approximately $70 million last fiscal year.

This fusion offers developers of technical and commercial applications the industry's most impressive range of scalable development tools to work with as they move forward into object-oriented development and beyond. From a global company potent enough to bring real enterprise power tools to distributed and embedded environments.

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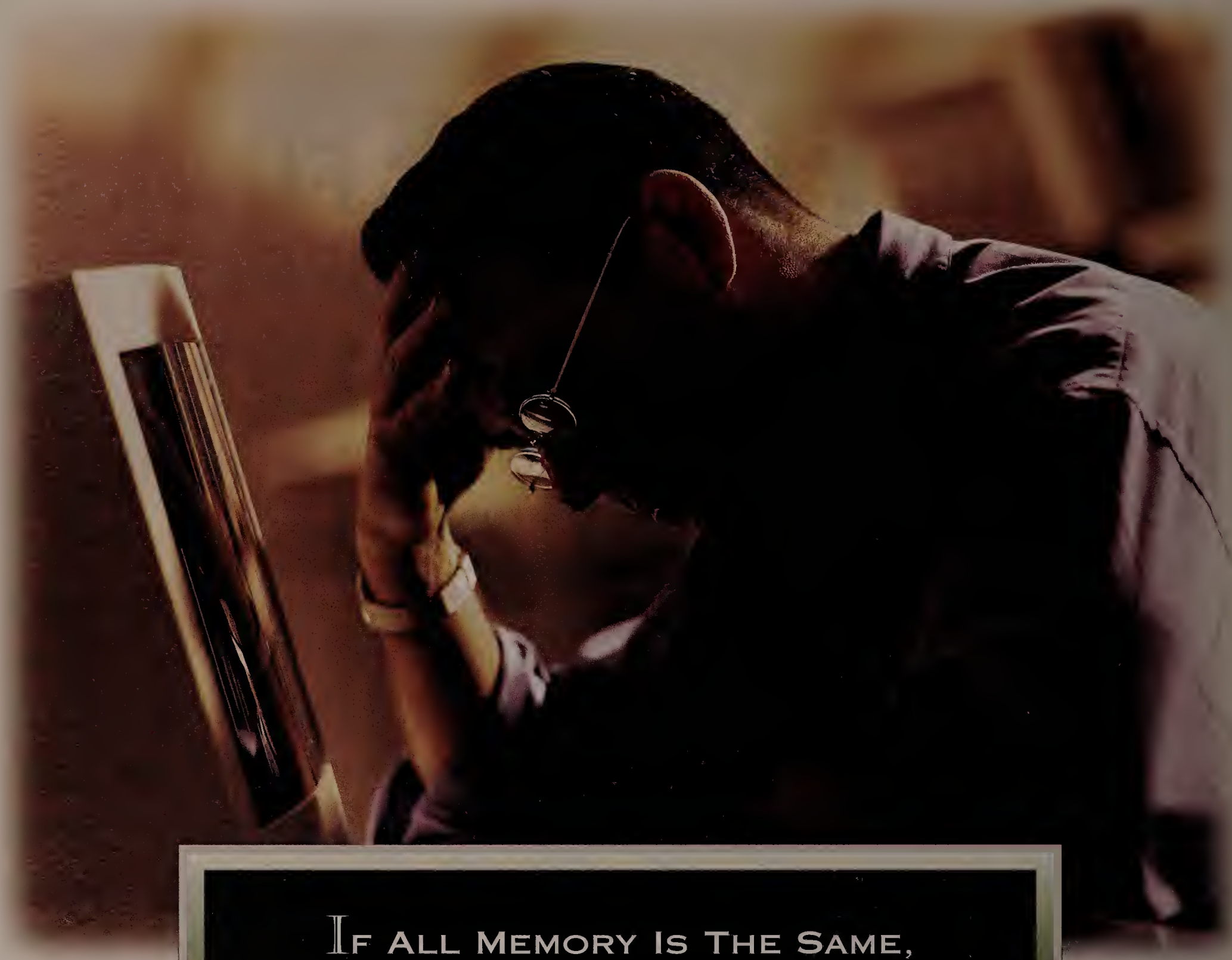

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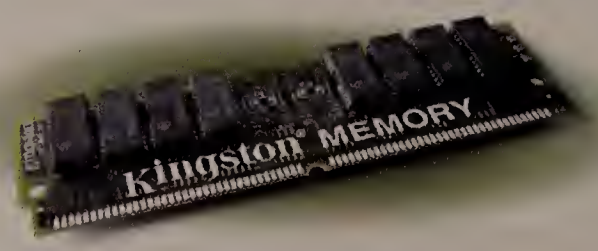

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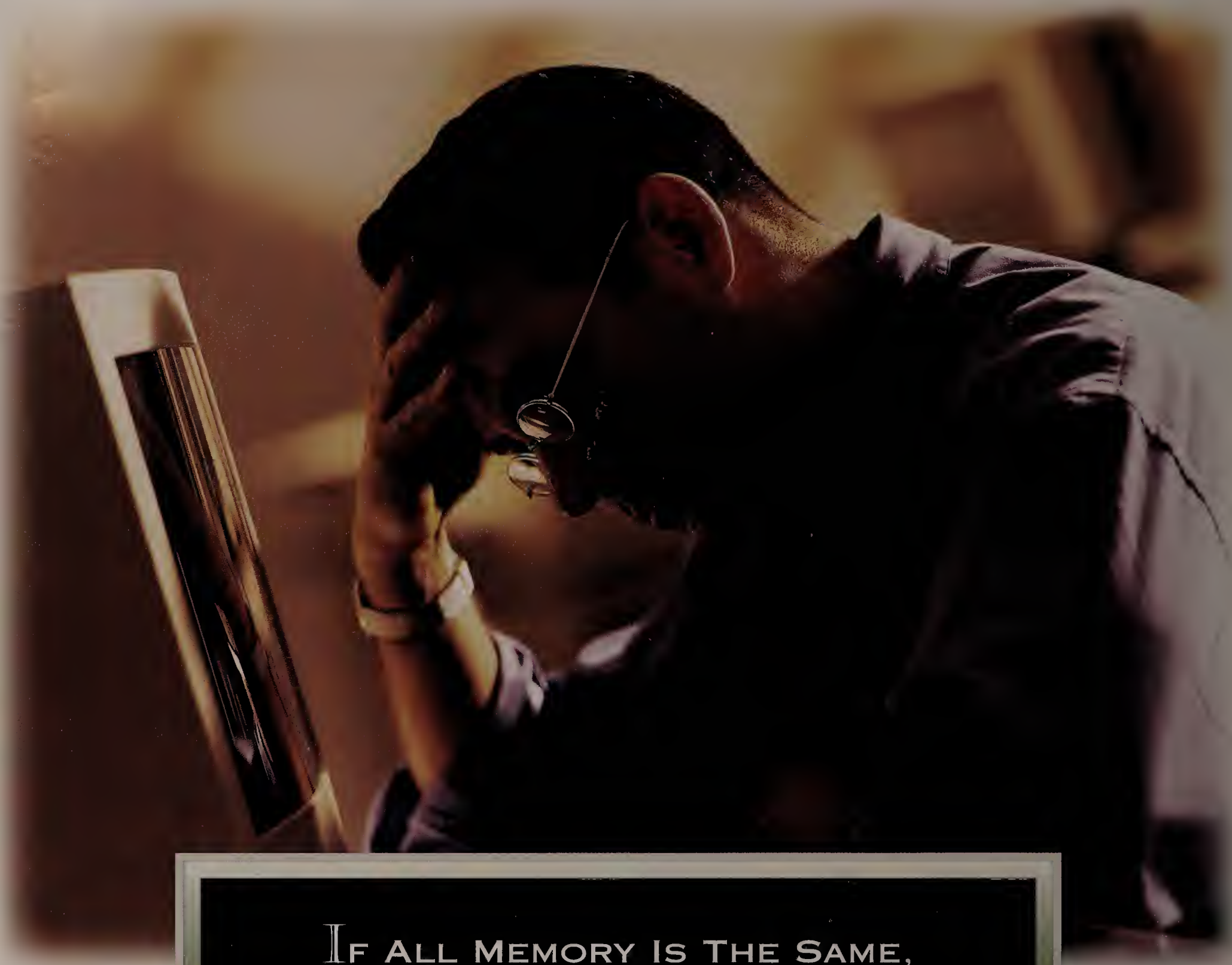

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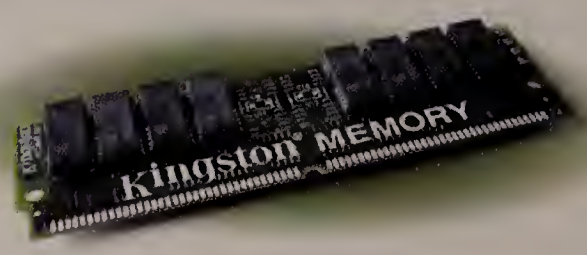

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